THE LANCET

A Journal of British and Foreign Medicine, Surgery, Obstetrics, Physiology, Chemistry, Pharmacology, Public Health, and News.

TELEGRAPHIC ADDRESS—LANCET, WESTRAND LONDON TELEPHONE NUMBER—GERRARD 8388

No. II. OF VOL. II., 1915.
No. 4793. Vol. CLXXXIX. LONDON, SATURDAY, JULY 10, 1915. Price 6d.

READY NEXT WEEK.

TWO NEW EDITIONS.

EDEN'S MIDWIFERY. Fourth Edition. 16s. net.
CUSHNY'S PHARMACOLOGY. Sixth Edition. 15s. net.
London: J. & A. Churchill, 7, Great Marlborough-street.

SPARE BRITISH LIVES.

REDUCE INFANT MORTALITY.

The key to this problem is found in a new book—DIET AND DISEASE IN INFANCY. By H. C. CAMERON, M.D., F.R.C.P., Phys., Children's Dept., Guy's Hospital. Coloured Illustrations. 8s. 6d. net.
London: J. & A. Churchill, 7, Great Marlborough-street.

EVERY MAN WANTED.

REDUCE SOLDIER MORTALITY.

Major P. S. LELEAN explains the need, the remedies, and the organisation in his new book—SANITATION IN WAR. Illustrated. 5s. net. Introduction by Surgeon-General Sir A. KEOGH, K.C.B., M.D., F.R.C.P.
"*" *As prevention of disease in the Army is of supreme importance it is not surprising that this book is having an enormous sale.*
London: J. & A. Churchill, 7, Great Marlborough-street.

BY C. MANSELL MOULLIN, M.D.Oxon.,

F.R.C.S., Consulting Surgeon to the London Hospital.
Fourth Edition.
ENLARGEMENT of the PROSTATE. Price 6s.
London: H. K. Lewis & Co., Ltd., 136, Gower-street.

WHEN to OPERATE in INFLAMMATION of the APPENDIX.
Third Edition now ready. Price 2s. 6d.
London: J. Bale & Danielsson, Ltd., 83-89, Gt. Titchfield-street.

By J. S. KELLETT SMITH, F.R.C.S. Eng.

LATERAL SPINAL CURVATURE AND

FLAT FOOT, AND THEIR TREATMENT BY EXERCISES.
"An excellent and most useful manual."—NEW YORK MED. RECORD.
Contains a detailed and fully illustrated account of the "creeping" exercises. 82 Illustrations. 5s. 6d. net. Wright, Bristol.

SPRUE IN CEYLON

A REPORT ON RESEARCHES, 1912-1914
By P. H. BAHR
M.A., M.D., D.T.M.& H. (Cantab.), M.R.C.P. (Lond.), M.R.C.S.
London School of Tropical Medicine
Large Royal 8vo. Paper covers. With a Map and 8 Plates. 7s 6d net
Cambridge University Press, Fetter-lane, London

WIDE RESECTION OF THE BLADDER

IN VESICAL GROWTH.
New Work. With 4 Plates. Cloth. 3s. 6d. net.
By B. HURRY FENWICK, F.R.C.S.,
Consulting Surgeon to the London Hospital;
Vice-President of International Society of Urology, and President to its Second Congress.
London: Adlard & Son, Bartholomew-close.

NEARLY READY. With 150 Illustrations.
By CHARLES J. HEATH, F.R.C.S. Eng.,
Late Surgeon to the Hospital for Diseases of the Throat, Golden-square, London.

AURAL SUPPURATION:

ITS ARREST, WITH PRESERVATION OF THE HEARING.
The indications for performance of the Author's conservative mastoid operation.
London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

Now Ready. Pp. xi. + 269. With 3 Charts. 5s. net.

ON ALCOHOLISM: Its Clinical Aspects

and Treatment.
By FRANCIS HARE, M.D., Medical Superintendent of the NORWOOD SANATORIUM, Beckenham.
"Marked by candour, common sense, and moderation ..... likely to become the standard text-book."—BRITISH MEDICAL JOURNAL.
London: J. & A. Churchill, 7, Great Marlborough-street.

By SAMUEL WEST, M.D., F.R.C.P.
DISEASES OF THE

ORGANS of RESPIRATION.

"It is worthy of British Medicine and of the great School in which the author is a teacher."—BRITISH MEDICAL JOURNAL.
Griffin & Co. 2nd Edit. 2 Vols., 36s. net, with numerous illustrations.

FOURTH EDITION. Revised and Enlarged. Crown 8vo. 9s. 6d. net.

SYNOPSIS OF SURGERY.

For PRACTITIONERS and STUDENTS.
By E. W. HEY GROVES, M.S., M.D., B.Sc.Lond., F.R.C.S.Eng., Surgeon, Bristol General Hospital; Lecturer on Surgery, Bristol University.
With Diagrams of Surface Markings.
"The reader will not only find what he wants with ease, but will also be enabled to follow the subject of his reference with interest and profit. May be regarded as complete in its range of subjects."—BR. MED. JNL.
Bristol: J. Wright & Sons Ltd. London: Simpkin & Co. Ltd.

NOW READY. Price 25s. net.

VENEREAL DISEASES

THE BIOLOGY AND TREATMENT OF.
BY
J. E. R. McDONAGH, F.R.C.S., Surgeon, London Lock Hospital.
Crown 4to. Art canvas, top gilt. 640 pages, with 54 half tone, colour and lithographic plates.
London: Harrison & Sons, 45, Pall Mall, S.W.

NEW EDITION. In 2 vols. 45s. net.

DEFORMITIES, including DISEASES of the

BONES and JOINTS. A Text-book of Orthopædic Surgery. Illustrated by 70 Plates and over 1000 Figures, and by Notes of Cases.
By A. H. TUBBY, M.S. Lond., F.R.C.S. Eng.
Second Edition: "The standard text-book in English on the subject.' —THE LANCET.
First Edition: "Standard work on the subject in the English language."—BRITISH MEDICAL JOURNAL.
Macmillan & Co., Ltd., St. Martin-street, London, W.C.

BY P. LOCKHART MUMMERY, F.R.C.S.

DISEASES OF THE COLON AND THEIR SURGICAL TREATMENT.
Numerous Illustrations and Coloured Plates. 10s. net.
Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

By FREDERICK J. McCANN, M.D.Edin., F.R.C.S. Eng., Surgeon, Samaritan Free Hospital for Women, London, N.W.

CANCER OF THE WOMB: ITS SYM-

PTOMS, DIAGNOSIS, PROGNOSIS, AND TREATMENT.
Fully illustrated. 20s. net.
LIVERPOOL MEDICO-CHIRURGICAL JOURNAL.—"Cancer of the Womb, by F. J. McCann, is a book that can be recommended alike to the general practitioner and the specialist. Written in a fluent manner, it embodies the ripe experience of a renowned operator, trained observer, and patient investigator."
EDINBURGH MEDICAL JOURNAL.—"The book is one of very great merit; it will be read with interest both by the specialist and general practitioner as an authoritative exposition of the important subject with which it deals."
PRACTITIONER.—"Dr. McCann has produced a valuable work which deserves to be widely known."
ST. BARTHOLOMEW'S HOSPITAL JOURNAL.—"The plates are excellent. This is a book we can thoroughly recommend."
London: Henry Frowde and Hodder & Stoughton

Now Ready. Second Edition. Thoroughly Revised, with 37 Illustrations. Price, cloth 3s. 6d. net, or paper cover 3s. net.

AIDS TO TROPICAL MEDICINE.

By GILBERT E. BROOKE, L.R.C.P., D.P.H., F.R.G.S., Port Health Officer, Singapore; Lecturer in Hygiene to the Medical School of the Straits Settlements.
"An immense amount of exact and invaluable information has been compressed into small space."—JOURNAL OF R.A.M.C.
London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

Now Ready. viii.+280 pp. Price 5s. net. With original Photographs and 143 special Prescriptions.

TREATMENT OF DISEASES OF THE SKIN.

By KNOWSLEY SIBLEY, M.D. Camb.
London: Edward Arnold, 41 and 43, Maddox-street, W.

MENTAL THERAPEUTICS.

(FAITH, MEDICINE AND THE MIND.)
By CHARLES REINHARDT-RUTLAND, M.D.
New Edition, with an Introduction by SIR OLIVER LODGE, F.R.S.
Price 2s. net. (Cloth, 8vo, 300 pp.)
The Trade supplied by Simpkin, Marshall & Co., Ltd.

THE LANCET is registered as a Newspaper. All rights reserved.

"LESLIES' ZINCOPLAST"

A MUCH IMPROVED MAKE OF ZINC OXIDE PLASTER. STRONGLY SELF-ADHESIVE; NON-IRRITATING; DOES NOT DRY UP.

May be obtained on White or Pink Tinted Cloth, 5 yd. or 10 yd. spools, in all the usual widths.

Medical Officers and Pharmacists are invited to write for Trial Sample.

LESLIES' Original Brown Holland Surgical Strapping (DOES NOT SLIP).

In General Hospital Use since 1875. Has a World-wide Reputation.

LESLIES, Ltd., 18, Eldon Street, London, E.C.

"Sauermilch"

THE PREMIER Lactic Acid or Soured Milk Preparation.

Prepared in our own Milk Laboratories under the direct control of a skilled bacteriological staff.

WELFORD & SONS (Dairy Company), Ltd.

Chief Offices and Milk Laboratories : : : ELGIN AVENUE, LONDON, W.

Principal Telephone: "Paddington 5440" (2 Lines.) Telegraphic Address: "Welfords Maida, London."

Valentine's Meat-Juice

In **Diarrhoea, Dysentery** and **Cholera Infantum** where it is **Essential** to **Conserve** the **Weakened Vital Forces** without **Irritating** the **Digestive Organs, Valentine's Meat-Juice** demonstrates its **Ease** of **Assimilation** and **Power** to **Sustain** and **Strengthen.**

W. B. Scranton, M. D., *Medical Superintendent Korean Mission Methodist Episcopal Church, Seoul, Korea:* "A most excellent use I frequently put VALENTINE'S MEAT-JUICE to is tiding Babies through Cholera Morbus and the Wasting Diseases incident to Summer and Inanition. It acts at once, and many a crisis has been passed safely by my patients, through the agency of VALENTINE'S MEAT-JUICE. It has also been of great value in my practice in the Far East in the treatment of that form of Summer Diarrhoea known as Sprue, where it tides the patients over until they can get to a better climate."

F. E. Gordon, M. D., *Anniston, Alabama:* "My baby took VALENTINE'S MEAT-JUICE with relish and with great benefit, and to its sustaining properties I think her recovery from one of the worst cases of Entero-Colitis I ever saw was largely due."

For Sale by European and American Chemists and Druggists.

VALENTINE'S MEAT-JUICE COMPANY,

D 115 **RICHMOND, VIRGINIA, U. S. A.**

THE LANCET.

No. 4793. LONDON, SATURDAY, JULY 10, 1915. Vol. CLXXXIX.

CONTENTS.

The whole of the literary matter in THE LANCET is copyright.

THE CROONIAN LECTURES on Trypanosomes causing Disease in Man and Domestic Animals in Central Africa. Delivered before the Royal College of Physicians of London on June 17th, 22nd, 24th, and 29th, 1915, by Sir DAVID BRUCE, C.B., F.R.S., M.B.Edin., F.R.C.P. Lond., Surg.-Gen., A.M.S.—Lecture III.—(*Illustrated*) 55

ORIGINAL ARTICLES.

Loss of Personality from "Shell Shock." By ANTHONY FEILING, M.D. Cantab., M.R.C.P. Lond., Temporary Assistant Physician and Casualty Physician to St. Bartholomew's Hospital; Assistant Physician to the Metropolitan Hospital and the Hospital for Epilepsy and Paralysis, Maida Vale..... 63

The Risks from Tuberculous Infection Retained in Books. By HENRY KENWOOD, M.B. Ed., D.P.H., F.R.S.M., Chadwick Professor of Hygiene, University of London, &c.; and EMILY L. DOVE, M.B. Lond., Public Health Research Student, University College, London 66

A Note on a Case of Primary Hepatic Carcinoma of the "Cirrhosis Carcinomatosa" Type. By F. PARKES WEBER, M.D. Cantab., F.R.C.P. Lond. 68

Treatment of Septic Compound Fractures and Wounds by Ionisation of Salicylate of Sodium. By ROBERT MCQUEEN, M.R.C.S., L.R.C.P. Lond., Captain, Royal Army Medical Corps, and LESLIE H. BOOTHBY 69

The Relationship between Nuclear Division and Phagocytic Power in Polymorphonuclear Leucocytes. By FRANK H. TAYLOR, M.D. Lond., F.R.C.S.Eng., M.R.C.P. Lond., D.P.H. Camb., Lecturer on Bacteriology, University of London, King's College.—(*Illustrated*) 70

The Action of Chlorine on the Blood. By H. WILSON HAKE, Ph.D., F.I.C., F.C.S., Lecturer on Toxicology at the Westminster Hospital Medical School and at the London School of Medicine for Women. (Preliminary Note.) 86

CLINICAL NOTES:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

On Transient Renal Congestion. By F. H. EDGEWORTH, M.A., M.D. Cantab., D.Sc. Lond., Major, R.A.M.C. (T.F.) 72

Penetrating Injury to the Eye from Broken Spectacle Glass. By SYDNEY STEPHENSON, M.B. Edin., F.R.C.S. Edin., D.O.Oxon. 72

MEDICAL SOCIETIES.

ROYAL ACADEMY OF MEDICINE IN IRELAND: Demonstration of New X Ray Apparatus.—Exhibition of Casts.—Estimation of Degree of Brain Development from Endocranial Casts.—Action of Rennin.—Effects of Racemic Arginin on the Excretion of Creatine and Creatinine.—Some Applications of Electrolytic Reduction..... 77

REVIEWS AND NOTICES OF BOOKS.

The Early Diagnosis of Heart Failure and other Essays on the Heart and Circulation. By T. Stacey Wilson, M.D. Ed., F.R.C.P. Lond., B.Sc. Ed. 73

Diabetes Mellitus: Designed for the Use of Practitioners of Medicine. By Nellis B. Foster, M.D..... 74

Text-book of General Therapeutics for Veterinarians. By E. Fröhner 74

Modern Illuminants and Illuminating Engineering. By Leon Gaster and J. S. Dow ... 74

Institute of Physiology, University College, London: Collected Papers. Vol. XVIII. Edited by Ernest H. Starling, M.D., F.R.C.P., F.R.S..... 75

Transactions of the American Medico-Psychological Association. Vol. XXI..... 75

The Journal of Physiology. Edited by J. N. Langley, Sc.D., F.R.S. Vol. XLIX..... 75

NEW INVENTIONS.

The "Kirby" Hook-pin.—(*Illustrated*) 77

An Inclined Plane for the Treatment of "Gassed" Cases.—(*Illustrated*)..... 78

LEADING ARTICLES.

THE TAXATION OF HOSPITALS... 79

TUBERCULOSIS IN SOUTH AFRICA 80

ANNOTATIONS.

Poisons in Warfare 81

The Metropolitan Water-supply 81

Congenital Syphilis among the Newly Born 82

Mobilisation and the Plumbers' Company..... 82

Illegitimate Infants and Foundling Hospitals 82

Urethral Caruncle 83

Recent Researches on Sprue 83

The Prevention of Bedsores after Injuries of the Spinal Cord in the War 84

Latent Fracture and Fracture-dislocation of Cervical Vertebræ 84

Report of the Medical Officer of Health of the Port of London 85

Ventricular Fibrillation 85

The British Pharmacopœia: A Foreign Appreciation..... 86

SPECIAL ARTICLES.

Scotland: Edinburgh Students and War Service.—Treatment of Tuberculous Soldiers.—Arrival of Wounded in Edinburgh.—Edinburgh Royal Infirmary.—Edinburgh and the Training of Officers..... 87

Ireland: Royal College of Surgeons in Ireland.—The Treatment of Tuberculosis in Belfast.—Scarlet Fever in Belfast.—Belfast Medical Men and the War 88

The Belgian Doctors' and Pharmacists' Relief Fund: The Distribution of Funds in Belgium.—The Week's Subscriptions.—The Appeal for Surgical Instruments..... 89

Annual Report of the Local Government Board for 1913-14 90

The Research Defence Society.. 91

The Services: Royal Navy Medical Service.—Royal Naval Volunteer Reserve.—Royal Army Medical Corps.—Special Reserve of Officers.—Territorial Force.—Journal of the Royal Army Medical Corps ... 91

VITAL STATISTICS:

Health of English Towns..... 92

Health of Scotch Towns 93

Health of Irish Towns 93

CORRESPONDENCE.

Hospitals and the Spirit Duties (Mr. F. A. Hocking)..... 93

The Treatment of Acute Lobar Pneumonia (Mr. J. A. W. Pereira) 94

Stomach *v.* Heart in Relation to Præcordial Pain and Sudden Death (Mr. H. Walter Verdon) 94

The French Red Cross: Vacancies for Medical Men (Dr. James Donelan) 95

The Incidence of Plague in Europe (Dr. Ralph St. John Brooks)..... 96

Boiled Vaccines (Dr. David Sommerville)..... 96

The Exchange of Medical Officers 96

OBITUARY.

Richard Clement Lucas, M.B., B.S. Lond., F.R.C.S. Eng., Consulting Surgeon to Guy's Hospital..... 96

THE WAR.

The Casualty List..... 98

Deaths among the Sons of Medical Men 98

The Honours List 98

Military Medical Officer Prisoners Released 99

Interned British Surgeons 99

The French Red Cross 99

The American Women's War Hospital, Paignton..... 99

The War Library 100

Queen Mary's Convalescent Auxiliary Hospitals..... 100

How Casualty Lists are Compiled 100

The Order of St. John and the Red Cross Society 100

Typhus Fever in a German Prison Camp 100

Portsmouth Relief Funds..... 100

The Almeric Paget Massage Corps..... 101

A New Hospital for Officers..... 101

Inspection of Motor Ambulances by the Queen 101

An Anglo-Belgian Relief Committee 101

Royal Gifts for the Wounded... 101

Royal Naval Medical Information Bureau 101

Gramophones for the Military Hospitals..... 101

MEDICAL NEWS.

Donations and Bequests 63

Death of Mr. R. D. G. Hall, Littlehampton 63

Presentation to Sir George Hare Phillipson..... 71

Literary Intelligence..... 78

The Oxford Ophthalmological Congress 81

The Holt Bequest for Liverpool 81

The late Dr. David Griffiths 89

Royal Colleges of Physicians and Surgeons, Ireland: Reuben Harvey Memorial Prize..... 90

Death of Dr. Thomas Smailes... 90

University of Cambridge: Pass-list 101

Victoria University of Manchester: Pass-list 101

University of Bristol: Pass-list 102

Royal College of Surgeons of Edinburgh: Pass-list 102

University of London..... 102

Royal Society of Medicine: Honorary Fellows..... 102

Royal College of Surgeons of England: Election to the Council..... 102

The late Dr. John Jones, of Ilfracombe 102

University of Oxford: Degree conferred..... 102

Mothercraft Exhibition..... 102

PARLIAMENTARY INTELLIGENCE.

Notes on Current Topics: Notification of Births (Extension) Bill.—Casualties in Dardanelles Operations 103

House of Commons..... 103

Books, &c., received 102

Appointments 105

Vacancies 105

Births, Marriages, and Deaths.. 105

Notes, Short Comments, and Answers to Correspondents... 106

Medical Diary 107

Meteorological Readings 107

Acknowledgment of Communications received 108

FOR INDEX TO ADVERTISEMENTS SEE PAGES 2 & 4.

INDEX

MEDICAL AND OTHER BOOKS AND PUBLICATIONS

PAGE

ADLARD & SON:—
Fenwick .. Wide Resection of the Bladder in Vesical Growth ..... Cover 1

APPLETON & CO.:—
Cannon .... Bodily Changes in Pain, Hunger, Fear, and Rage 5
Hill ..... Border-line Diseases 5

ARNOLD:—
Sibley ..... Treatment of Diseases of the Skin .. Cover 1

BAILLIERE, TINDALL & COX:—
Bigg..... Indigestion 6
„ ..... War Diseases (Typhus, Enteric, Dysentery, and Cholera)..... 6
Brooke .... Aids to Tropical Medicine .... Cover 1
Heath ..... Aural Suppuration: Its Arrest, &c. Cover 1
Mummery .. Diseases of the Colon and their Surgical Treatment .. Cover 1

BALE, SONS & DANIELSSON:—
Moullin.... When to Operate in Inflammation of the Appendix .. Cover 1

CAMBRIDGE UNIVERSITY PRESS:
Bahr ..... Sprue in Ceylon Cover 1
Eugenics Laboratory Publications 7

CHURCHILL, J. & A.:—
Cameron .. Diet and Disease in Infancy..... Cover 1
Cushny .... Pharmacology Cover 1
Eden ..... Midwifery .... Cover 1
Hare ..... On Alcoholism: Its Clinical Aspects and Treatment .. Cover 1
Leleau .... Sanitation in War Cover 1
Thorne, Bealy .... Schott Methods of the Treatment of Chronic Diseases of the Heart 7

FROWDE AND HODDER & STOUGHTON:—
McCann .. Cancer of the Womb Cover 1

GRIFFIN & CO.:—
West ..... Diseases of the Organs of Respiration Cover 1

HARRISON & SONS:—
McDonagh . Venereal Diseases, the Pathology and Treatment of. Cover 1

LEWIS & CO:—
Allen ..... Vaccine Therapy: its Theory and Practice 3
Cooper .... Sexual Disabilities of Man 3

LEWIS—(Continued).
Emery .... Immunity and Specific Therapy 3
Goodall & Washbourn Manual of Infectious Diseases 3
Ham ..... Handbook of Sanitary Law 3
Jones ..... Medical Electricity.. 3
„ ..... Ionic Medication; the Principles of the Method, &c. 3
Kenwood .. Health in the Camp 3
Macleod.... Pathology of the Skin 3
Moullin .... Enlargement of the Prostate .... Cover 1
Radcliffe-Crocker.. Diseases of the Skin.. 3
Rutherford. The Ileo-Cæcal Valve 3

MACMILLAN & CO.:—
Allbutt, Sir T. Clifford .. Diseases of Arteries and Angina Pectoris 5
Gates ..... The Mutation Factor in Evolution..... 5
Luciani .... Human Physiology .. 5
New System of Medicine 5
Tubby ..... Deformities, including Diseases of the Bones and Joints Cover 1

MEDICAL PUBLISHING CO.:—
Lane, Sir A. .... Operative Treatment of Fractures 6

MURRAY:—
Brunton, Sir L. .... Therapeutics of the Circulation 7

PULMAN & SONS:—
Elliot ..... Sclero-Corneal Trephining in the Operative Treatment of Glaucoma 6

SIMPKIN, MARSHALL & CO.:—
Reinhardt-Rutland.. Mental Therapeutics Cover 1

WRIGHT & SONS (BRISTOL):—
Groves .... Synopsis of Surgery Cover 1
Smith ..... Lateral Spinal Curvature and Flat Foot, and their Treatment by Exercises Cover 1

MEDICAL LIBRARIES, &c.:—
Behnke—Stammering 6
Ketley—Stammering 6
Lewis & Co.'s Medical & Scientific Circulating Library..... 6
Matthews—Wood: Application of Trusses 6

OFFICIAL AND GENERAL ANNOUNCEMENTS

APPOINTMENTS VACANT:—
Birmingham General Dispensary . 47
Birmingham and Midland Eye Hospital 48
Bolton Infirmary and Dispensary. 48
Borough of Cheltenham Education Committee 47
Bradford Children's Hospital 48
Bridgwater Hospital 48
Bristol General Hospital 47
Bury Infirmary 47
Cheltenham General Hospital 48
Chester County Asylum 47
Cossham Memorial Hospital, Bristol 47
County Asylum, Prestwich, Manchester..... 48
Croydon Mental Hospital 49
Durham County Hospital 48
Elder Dempster & Co., Liverpool.. 49
Great Northern Central Hospital, Holloway 48
Hall Line, Liverpool 49
Hampstead General and North-West London Hospital 49
Hospital for Consumption and Diseases of the Chest, Brompton 47
Hospital for Sick Children, Great Ormond-street 47
Kent Education Committee 48
King Edward VII.'s Hospital, Cardiff 49
Leeds Public Dispensary..... 49
London (Royal Free Hospital) School of Medicine for Women. 47
Macclesfield General Infirmary .. 48
Manchester Children's Hospital.. 49
Manchester Northern Hospital for Women and Children..... 48
National Hospital for Diseases of the Heart 48
Pacific Line, Liverpool 49
P. & O. Company, Leadenhall-st... 49
Royal Albert Edward Infirmary and Dispensary, Wigan..... 47
Royal National Hospital for Consumption, &c., Ventnor..... 49
Royal Portsmouth Hospital 48
Royal Sea Bathing Hospital, Margate 47
Royal Surrey County Hospital, Guildford 48
Royal Victoria Hosp., Folkestone. 48
Royal Westminster Ophthalmic Hospital 48
St. Bartholomew's Hospital, Rochester 48
St. Mark's Hospital for Cancer, Fistula, &c. 49
Salisbury Infirmary 48
Sheffield Royal Infirmary 48
South Devon and East Cornwall Hospital, Plymouth 48
Sunderland Royal Infirmary 48
Swansea General and Eye Hospital 48
Trinity Hospital, Greenwich..... 49
Tunbridge Wells General Hospital 49
University of Birmingham 49
University of Durham College of Medicine, Newcastle-upon-Tyne. 48
Walsall and District Hospital 47
Warrington Infirmary and Dispensary 47

APPOINTMENTS—(Continued).
West Bromwich and District Hospital 47
West Derby Union, Mill-road Infirmary 48
West Derby Union, Walton Institution..... 48
West End Hospital for Diseases of the Nervous System, &c..... 49
West Ham and Eastern General Hospital 48

ASSISTANCIES, MEDICAL:—
Arnold & Sons, Giltspur-street.... 49
C., Harley street 49
Darby, Lye, Worcestershire 50
Hospital Secretary, Bryanston-st. 49
No. 460, L.O., Strand 49
No. 461, L.O., Strand 50
No. 462, L.O., Strand 49
No. 472, L.O., Strand 50
No. 483, L.O., Strand 50
No. 484, L.O., Strand 50
No. 485, L.O., Strand 50
No. 486, L.O., Strand 50
Rhodes, Battersea-park 49
Surgeon, Leadenhall-street..... 49
Turner, Adam-street 49

ASYLUMS, HOMES, &c.:—
Abbotswood House, Cinderford .. 43
Ashwood House, Kingswinford .. 40
Austin, Clonakilty 48
Barnsley Hall, Bromsgrove..... 45
Barnwood House Hospital 41
Bishopstone House, Bedford..... 40
Brunton House, Lancaster..... 48
Buntingford House Retreat, Buntingford 43
Camberwell House, Peckham-road 42
Cheadle Royal..... 41
City of London Mental Hospital, Stone 48
Clarence Lodge, Clapham Park .. 40
Colthurst House, Alderley Edge.. 45
Coppice, The, Nottingham 41
Court Hall, Kenton, near Exeter.. 40
Dalrymple House, Rickmansworth 44
David Lewis Colony, Alderley Edge 45
Duff House, Banff..... 44
G., Hampstead 48
Ghyllwoods 43
Green, Killygordon 48
Grove House, Church Stretton 41
Grove, The, Catton, Norwich 41
Haslemere Nursing Home 46
Haydock Lodge, Newton-le-Willows 42
Haynes, Brentwood..... 46
Heighan Hall, Norwich 41
Home for Epileptics, Maghull 45
Invernith Sanatorium, Colinsburgh 43
London Fever Hospital..... 41
Malling Place, Kent 41
Melbourne House, Leicester 45
Mendip Hills Sanatorium 44
Meyrick, Brighton 46
Middleton Hall, Co. Durham..... 40
Moat House, Tamworth 41
Newmains Retreat, Lanarkshire.. 43
New Saughton Hall, Polton, Midlothian 42
Nordrach-on-Dee, Banchory 44

ASYLUMS—(Continued).
Northumberland House, Finsbury Park 42
Northwoods House, Winterbourne 42
Norwood Sanatorium, Ltd..... 43
No. 381, L.O., Strand 48
No. 412, L.O., Strand 46
No. 457, L.O., Strand 46
Ochil Hills Sanatorium..... 45
Otto House, West Kensington 40
Owner, Preston 48
Peckham House..... 43
Pendyffryn Hall Sanatorium, Nordrach-in-Wales 45
Pinewood Sanatorium, Wokingham 44
Plympton House, Plympton 41
Portsmouth Corporation Mental Hospital 40
Royal Earlswood Institution for Mental Defectives..... 42
St. Andrew's Hospital, Dollis Hill 48
St. Andrew's Hospital, Northampton 41
St. George's Retreat, Burgess Hill 40
St. Luke's Hospital for Mental Diseases 40
Springfield House Private Asylum, Bedford 40
Stretton House, Church Stretton. 41
The General Manager, Cravenstreet 48
The Grange, near Rotherham 41
Vale of Clwyd Sanatorium 45
Warneford Asylum, Oxford..... 40
Wye House, Buxton 41

HEALTH RESORTS BATHS, &c.:—
Alexandra Therapeutic Institute.. 45
Droitwich Brine Baths 45
Smedley's, Matlock 45
Val-Mont 45

HOUSE & ESTATE AGENTS:—
Bedford & Co., Wigmore-street .. 51
Elliott, Son & Boyton, Vere-street 51
Ley Clark, Wimpole-street 51
Rutley, Son & Vine, George-street, Euston-road 51
Urry, Woods & Pethick, Ventnor.. 51

LIFE & FIRE ASSURANCES, &c.:—
General Life Assurance Co. 38
Medical, Sickness and Accident Society..... 27
National Provident Institution .. 37
Prudential..... 38

MASSAGE:—
Associated Male Nurses and Masseurs 38
London School of Massage 38

MEDICAL ACCOUNTANTS, &c.:—
Turner..... 50

MEDICAL AGENTS:—
Fieldhall, Limited 52
Manchester Clerical, &c., Association 51
Medical Agency..... 52
Needes, Herbert 52

MEDICAL AGENTS—(Continued).
Needes, J. C. 52
Peacock & Hadley 52
Scholastic, Clerical, &c., Association 52
Turner 52

MEDICAL SCHOOLS:—(LONDON.)
London School of Clinical Medicine 37
St. Mary's Hospital Medical School 37
West London Post-Graduate College 37

NURSING INSTITUTES:—
Army and Navy Male Nurses Co-operation 38
Co-operation of Temperance Male and Female Nurses..... 39
General Nursing Association 40
Hospital for Sick Children, Great Ormond street 38
London Nurses' Association 39
London Temperance Male and Female Nurses Co-operation.... 39
Male Nurses Temperance Co-operation 38
Mental Nurses Association 38
Mental Nurses' Co-operation..... 38
Nurses' Co-operation, Portland-place..... 38
Registered Nurses' Society..... 38
St. Bartholomew's Hosp. Trained Nurses' Institution..... 38
St. John's House 38
St. Luke's Hospital 40
Temperance Association of Male Nurses, Ltd..... 39
Temperance Male Nurses Co-operation 39
The Retreat, York 39

OFFICIAL NOTICES:—
City of London Lying-in Hospital 37
London School of Tropical Medicine 37
Queen Charlotte's Lying-in Hospital 37
Queen Mary's Convalescent Auxiliary Hospitals 51
University of Birmingham 37

PARTNERSHIPS & PRACTICES:—
Arnold & Sons, Giltspur-street.... 50
Lee & Martin, Birmingham..... 50
Manchester Clerical, Medical and Scholastic Association 50
No. 434, L.O., Strand 50
No. 447, L.O., Strand 50
Reynolds & Branson, Leeds 50
Treatment, Nicholas-lane 50
Turner, Adam-street 50

RAILWAY & STEAMSHIP CO.'S.:—
New Zealand Shipping Co. 37

TUTORS & LECTURERS:—
Behnke 37
Med. Correspondence College 37
Weymouth 37

For Index to Trade and Miscellaneous Advertisements see page 4.

The Croonian Lectures
ON
TRYPANOSOMES
CAUSING DISEASE IN MAN AND DOMESTIC ANIMALS IN CENTRAL AFRICA.

Delivered before the Royal College of Physicians of London on June 17th, 22nd, 24th, and 29th, 1915,

BY SIR DAVID BRUCE, C.B., F.R.S., M.B. EDIN., F.R.C.P. LOND.,
SURGEON-GENERAL, A.M.S.

LECTURE III.[1]

Delivered on June 24th.

MR. PRESIDENT AND GENTLEMEN,—In my last lecture I described *Trypanosoma brucei*, the most widely distributed pathogenic trypanosome of Africa, the cause of nagana among the domestic animals, and "Nyasaland sleeping sickness" in man. To-day I propose to take as my subject *Trypanosoma gambiense*, the cause of the notorious "Congo sleeping sickness."

HISTORICAL.

Trypanosoma gambiense was first seen in the blood of an Englishman who had been employed for some six years as master of a Government boat on the river Gambia in West Africa. He was admitted to the Government hospital at Bathurst on May 10th, 1901, 14 years ago. Mr. R. M. Forde, the colonial medical officer in charge, examined his blood and saw actively moving bodies, but was unable to recognise their nature. He therefore asked the late Dr. J. E. Dutton, of the Liverpool School of Tropical Medicine, to come to his help. In the meantime, however, the patient had been invalided to England, where he was treated in a Liverpool hospital for some time. Thinking himself sufficiently recovered to resume duty, he returned to Bathurst in December, 1901, and on the 15th of the same month his blood was submitted to Dr. Dutton for examination. Dr. Dutton saw the parasite, described it, and named it *Trypanosoma gambiense*. But at this time it did not enter into the minds of anyone that this trypanosome was the cause of sleeping sickness. It was looked upon as an almost harmless hæmatozoon, causing no inconvenience to the native and only a slight ephemeral fever, known as trypanosoma fever, to the white man.

At the same time the finding of a parasite of this kind for the first time in the blood of man raised a good deal of interest, and Dr. Dutton and Dr. C. Todd were sent out in the following year to investigate the question further. They arrived at Bathurst on Sept. 2nd, 1902, and proceeded to examine a large number of natives for the presence of trypanosomes in their blood. They examined in all 1043 natives on the Gambia, and found the parasite only in six cases. They summed up their report by saying that, taking all the facts into consideration, they believe that trypanosoma fever, as it occurred in natives, was a peculiarly mild one, and they suggested the possibility that the natives might bear the same relation to the Europeans as the wild game of Africa to domestic animals in nagana, the tsetse-fly disease. In other words, that the black man was immune to the disease, and merely acted as a reservoir of the virus to the more susceptible white man. For some time, then, the important pathogenic part this trypanosome plays remained unknown, and it was not until 1903, when sleeping sickness was being investigated in Uganda by the Royal Society Commission, that the discovery was made that *Trypanosoma gambiense* was in truth the cause of sleeping sickness.

This, then, is a short account of this hæmatozoon from its discovery in 1901 as a supposed harmless parasite in the blood of natives on the Gambia to its apotheosis as the cause of that interesting and hitherto mysterious disease, sleeping sickness.

GEOGRAPHICAL DISTRIBUTION.

Reference to the map published to illustrate my first lecture will show that this species of trypanosome has a wide distribution in the tropical zone of Africa. It extends on the north from St. Louis at the mouth of the river Senegal to the Bahr-el-Ghazal in the Egyptian Soudan; on the east it reaches to the eastern shore of Victoria Nyanza; and on the south to the southern end of Lake Tanganyika, the river Luapula in North-West Rhodesia, and Donguela in Portuguese West Africa.

MORPHOLOGY.

When in Nyasaland I received from Dr. Kleine, German East Africa, three monkeys infected with *Trypanosoma gambiense*. These animals had been inoculated with blood from natives suffering from "Congo sleeping sickness" on Lake Tanganyika, and it is from these three strains that this description is taken. We sent for these strains because we wished to have an opporunity of comparing *Trypanosoma gambiense* with the trypanosome causing disease in man in Nyasaland side by side and under similar conditions. It presents a strong resemblance to the nagana parasite. There are the same short and stumpy, intermediate, and long and slender forms. In size and general appearance these two species so closely resemble each other that one might easily believe them to be varieties of the same species. The shape of the long and intermediate forms is the same as in the nagana parasite, but among the short there is an absence of the blunt-ended forms, which have been seen to be so marked a feature in the Nyasaland trypanosome. The protoplasm often shows many chromatin granules in its substance. In *Trypanosoma brucei*, among the short and stumpy, there are large numbers of posterior-nuclear forms. In the Tanganyika strains not a single example of this peculiarity was seen. The micronucleus is small and round, and situated on an average 1·1 microns from the posterior extremity in the short, 1·3 in the intermediate, and 1·8 in the long forms. The undulating membrane, as in the other members of this group, is well developed, and thrown into bold folds and undulations. The flagellum in the long and intermediate forms is free. There is no free flagellum in the short forms. In regard to length, there is practically no difference between the two species as will be seen from Table VI.

Trypanosoma gambiense is therefore very similar in size and shape to *Trypanosoma brucei*, but it would appear to be possible to distinguish them by the presence of the blunt-ended, posterior-nucleated forms which are so common in the blood of animals infected by the nagana parasite and quite absent in animals infected by the other. But as these posterior-nucleated forms are absent or scarce in the blood of man, this method of diagnosis

[1] Lectures I. and II. were published in THE LANCET of June 26th (p. 1323) and July 3rd (p. 1) respectively.

requires the inoculation of experimental animals and the study of many preparations of their blood. It would appear to be impossible at present to distinguish between the two species by the microscopical examination of preparations made from the blood of man alone.

TABLE VI.—*Showing Length of* Trypanosoma Gambiense *Compared with* Trypanosoma Brucei, *Zululand, 1913.*

Strain.	Average.	Maximum.	Minimum.
	Microns.	Microns.	Microns.
T. gambiense, Uganda	22·1	33·0	13·0
,, ,, Tanganyika I. ...	22·7	34·0	15·0
,, ,, ,, II. ...	25·8	36·0	16·0
,, ,, ,, III. ...	21·3	34·0	16·0
T. brucei, Zululand, 1913	21·0	35·0	12·0

The average breadth of *Trypanosoma gambiense* is 2·31 microns; its maximum breadth being 4·75, and its minimum 1·25 microns.

SUSCEPTIBILITY OF ANIMALS TO TRYPANOSOMA GAMBIENSE.

I now pass to the pathogenic action of this species on various animals. In this it differs markedly from the nagana parasite, which is essentially a trypanosome of the lower animals, seldom attacking man; whereas the reverse is true of the species under consideration, which under natural conditions is almost wholly confined to man. When *Trypanosoma gambiense* is taken directly from a patient suffering from sleeping sickness there is often a good deal of difficulty in passing it on to the lower animals—that is to say, it is difficult to infect experimental animals by the inoculation of infected human blood. This is very different from the behaviour of *Trypanosoma brucei*, which infects most animals with the greatest readiness.

[To illustrate this Sir David Bruce gave tables on the screen showing the result of inoculating various animals with the three Tanganyika strains. From these tables it was manifest that a marked difference existed between *Trypanosoma gambiense* and *Trypanosoma brucei* in regard to their virulence towards animals.]

It is almost impossible at first to give this disease to goats, monkeys, dogs, and guinea-pigs. The rat is the animal which is least refractory. However, after the trypanosome has become accustomed by several passages through a particular kind of animal its virulence for this species is heightened. It must also be noted that there is reputed to be a good deal of difference in the virulence of different strains. This difference in regard to virulence between the two species is shown in Table VII.

TABLE VII.—*Showing the Average Duration in Days of the Disease caused by* Trypanosoma Gambiense, *Tanganyika, compared with that caused by* Trypanosoma Brucei, *Zululand.*

—	Monkey.	Dog.	Guinea-pig.	White rat.
Trypanosoma gambiense ...	159	96	264	137
Trypanosoma brucei	26	34	67	30

The disease in animals caused by *Trypanosoma gambiense* is thus much more chronic than that caused by *Trypanosoma brucei*, and this character, combined with the morphology already described, affords the surest and safest means of separating these species.

GLOSSINA PALPALIS THE CARRIER OF TRYPANOSOMA GAMBIENSE.

As we have already seen, the carrier of *Trypanosoma gambiense* is the tsetse fly, *Glossina palpalis*, whose habitat is the wooded shore of lakes and rivers. When the Royal Society Commission in 1903 had convinced itself that in all probability a trypanosome was the cause of sleeping sickness, naturally on the analogy of the old nagana work, a tsetse fly was looked for. It is a curious fact that at that time the presence of tsetse flies on Lake Victoria was unsuspected. I have already described the habits of this species of fly, and shown how very numerous it is in Uganda, swarming on the lake shore in such numbers that our fly boys, who collected about 500 daily for months together from one or two spots, did not seem to make any impression on the supply.

Infectivity of Wild Glossina Palpalis.

Some of these flies were found to be naturally infected with *Trypanosoma gambiense*, and I shall therefore in the first place consider the natural infection which exists among the wild *Glossina palpalis*. It will be remembered that the proportion of tsetse flies in Nyasaland infected with Nyasaland sleeping sickness was 1 in 500. It will be interesting, then, to compare the infectivity of the wild tsetse flies in Uganda. It must be granted that although the shores of Victoria Nyanza and the banks of the Nile and other rivers swarmed with these tsetse flies before 1898, it was only about this time that they became infected with sleeping sickness. Before this time sleeping sickness was unknown in Uganda. It seems probable that the disease was introduced by Emin Pasha's men, who were brought into the country from the Belgian Congo some little time before.

I am sorry that the same method of examination was not used in Uganda as in Nyasaland. In Nyasaland the flies were fed on three different species of animals for nine days. In Uganda the flies were caught on the lake shore, and when brought up to the laboratory were only fed on one species of animal, the monkey. In 1903 at Entebbe, the Government cantonment, the tsetse flies had plenty of opportunity of becoming infected, since they were caught in the vicinity of the hut-tax labourers' camp. These men came in thousands to Entebbe to work for Government for one month in lieu of paying hut-tax. They lived in rudely built grass huts near the lake shore, and on examination of their blood some 30 per cent. of them were found to harbour the parasite. In 1903, while these highly infected labourers were living on the lake shore, the proportion of infective flies was found to be as high as 11·2 per 1000. The Government removed the hut-tax labourers from the vicinity of the lake, which became deserted, and a year afterwards the proportion of infected flies fell to 1·2 per 1000. When the Commission returned to Uganda in 1908 and took up camp at Mpumu at the north end of Lake Victoria we found the lake-shore flies in the vicinity still infective, although the population had been removed early that year. The examination of 7200 flies gave a proportion of 1·8 per 1000. But we had given the Government to understand that as soon as the natives were removed the flies would become harmless. It was therefore important to find out how long the lake-shore flies remained infective, and why they remained infective. For this purpose they were

examined every year until 1912, and the result is given in Table VIII.

TABLE VIII.—*Showing the Results of Yearly Examinations of wild* Glossina Palpalis *from 1903 to 1912 inclusive.*

Year.	Locality.	Number of flies examined.	Number of flies infective.	Proportion of infective flies per 1000.	Remarks.
1903	Entebbe.	?	?	11·2	—
1904	,,	?	?	1·2	—
1908	Mpumu.	7,200	11	1·8	1 in 654
1909	,,	18,691	7	0·4	1 in 2,670
1910	,,	27,179	4	0·14	1 in 6,795
1911	,,	23,899	1	0·04	1 in 23,899
1912	,,	28,279	4	0·14	1 in 7,070

From the foregoing table it will be seen that although there had been a steady decrease in the proportion of infective flies, a few remained and these showed no sign of disappearing. The mistake made by the Commission was first in believing that the transmission of the *Trypanosoma gambiense* was mechanical, and that a fly lost its power of infection within three days after feeding on an infected animal; and, secondly, in believing that man was the sole reservoir of the virus. It was found that a fly may remain infective for several months, and that man is by no means the only source of the virus.

This prolonged infectivity which some flies possess is due to the fact that in these the trypanosomes do not die off, but proceed to further multiplication, and I must now describe the cycle of development which the parasite passes through in the fly, from its ingestion with the blood, until its appearance in the salivary glands of the fly in an infective form. When dealing with *Trypanosoma brucei* I mentioned that its development in the fly is identical with what takes place in the case of *Trypanosoma gambiense*, and that it would be more convenient to describe the cycle at this point. I did not describe the development of the nagana parasite in *Glossina morsitans*, as one description will suffice for both species.

THE CYCLE OF DEVELOPMENT OF TRYPANOSOMA GAMBIENSE IN GLOSSINA PALPALIS.

Let me again briefly rehearse the historical facts. Koch and Stuhlmann in German East Africa described developing forms in glossina but did not succeed in infecting healthy animals by the injection of these forms. It is to Kleine that the honour is due of being the first to show that a tsetse fly could convey the infection some 50 days after the fly had fed on an infected animal, and when we come to consider the difficulties of this observation we must feel that he deserves the very highest credit for making this important advance in our knowledge of trypanosome diseases. He used the tsetse fly *Glossina palpalis* and the nagana trypanosome in his first successful experiment, which was carried out at the end of 1908. A few months later, in March, 1909, we had our first successful experiment in Uganda with *Trypanosoma gambiense* and *Glossina palpalis*, and I think it will be best to introduce the subject by a description of this first experiment. (See Table IX.)

On March 5th, 1909, 60 *Glossina palpalis* were placed in two cages, 30 in each. The flies were fed on two infected monkeys for two days. They were then starved for 72 hours to get rid of the danger of mechanical transference. The following five days they were fed on a healthy monkey, and every successive period of five days or thereabouts on a fresh healthy monkey, up to 86 days, when the experiment came to an end. The result was that the first two monkeys remained healthy, and all the following monkeys up to 75 days became infected with sleeping sickness. If five days be deducted for the incubation period, then the flies became infected 20 days after their first feed on the infected animal. There is some evidence that among the 60 flies only one was infective. Fifty-four days after the beginning of the experiment each cage was placed on a separate monkey. Up to that time both cages of flies had been fed on the same animal. Cage A contained after 54 days 11 flies; Cage B 4 flies. Cage A continued to infect monkeys for 21 days more, making a total of 75 days. Cage B did not infect. Again, as was natural, the flies gradually died off during the experiment, and as each fly died it was carefully dissected and examined for trypanosomes. Not a single trypanosome of any kind whatever was seen in any dissected fly up to 75 days, when a fly died in Cage A, and this fly on examination was found to be swarming with trypanosomes. After the death of this fly Cage A ceased to be infective, and when the experiment was stopped the remaining flies were killed off and dissected, but among them not a sign of a trypanosome could be seen. In the same way the flies in the non-infective Cage B were examined with a similar negative result.

TABLE IX.—*Development of* Trypanosoma Gambiense *in* Glossina Palpalis.

Day of experiment.	Procedure with 60 flies: A, cage with 30 flies; B, cage with 30 flies.	Result.	
		Positive.	Negative.
0 to 2	Flies fed on infected monkey.		
2 ,, 3	Flies starved 72 hours.		
4 ,, 8	Flies fed on Monkey 579.		—
9 ,, 13	,, ,, 651.		—
14 ,, 18	,, ,, 652.	+	
19 ,, 23	,, ,, 653.	+	
24 ,, 28	,, ,, 654.	+	
29 ,, 33	,, ,, 655.	+	
34 ,, 38	,, ,, 672.	+	
39 ,, 41	,, ,, 722.	+	
42 ,, 43	Starved for 72 hours.		
44 ,, 51	Fed on Monkey 727.	+	
52 ,, 53	Starved for 76 hours.		
54 ,, 58	Cage A, fed on Monkey 735.	+	
54 ,, 58	Cage B, fed on Monkey 736.		—
59 ,, 60	Starved for 74 hours.		
61 ,, 65	Cage A, fed on Monkey 749.	+	
61 ,, 65	Cage B, fed on Monkey 748.		—
66 ,, 67	Starved for 72 hours.		
68 ,, 72	Cage A, fed on Monkey 765.	+	
68 ,, 72	Cage B, fed on Monkey 764.		—
73 ,, 74	Starved for 72 hours.		
75 ,, 79	Cage A, fed on Monkey 848.		—
89 ,, 81	Starved for 72 hours.		
82 ,, 86	Cage A, fed on Monkey 911.		—
87	Experiment stopped.		

This was a most interesting and successful experiment. It was evident that a single infective fly did all the mischief, and by good luck this fly was detected. Not only did one fly do all the mischief, but judging from the incubation periods it would appear that in all probability it infected each animal on the first day it bit it, showing how dangerous such an infective fly is. When this fly came to be dissected the gut was found to be crammed with innumerable trypanosomes, and in addition the salivary glands contained large numbers.

This is the first record of these parasites being found in the salivary glands, and it led up to the discovery that the invasion of the salivary glands is an integral part in the cycle of development of this group—Group A—of trypanosomes. After this numerous experiments were made on the same lines, and with several species of trypanosomes.

The Development of Trypanosoma Gambiense *in Laboratory-bred* Glossina Palpalis.

Let us now enter more fully into the development of *Trypanosoma gambiense* in *Glossina palpalis*, and first let us consider what proportion of laboratory-bred flies become infective when fed on an infected animal.

[Here the lecturer threw on to the screen a table giving the result in one series of experiments.]

In 42 experiments performed to ascertain what proportion of laboratory-fed flies become infective when fed on an infected animal, only 8 gave a positive result; as many as 34 were negative. In the 8 positive experiments 371 flies were used, an average of 46; in the 34 negative experiments 1323, an average of 40. The shortest time which elapsed before a laboratory-bred fly became infective with *Trypanosoma gambiense* was 27 days, the longest 53 days, and the average 36 days. In the 42 experiments 1694 laboratory-bred flies in all were used. If we consider that in each of the 8 positive experiments only 1 fly became infective, then only 8 flies in 1698, or 1 in 212 (0·5 per cent.) became infective. This is a very small proportion, and helps to account for the fact that 15 years elapsed before this cycle of development was discovered. This development of the trypanosome in the fly is somewhat similar to what occurs in the test-tube in artificial cultivation. A thousand tubes are inoculated, let us say, with *Trypanosoma brucei*; the trypanosomes all appear to die off, but 20 days later a peculiarly resistant individual is found in one tube of the thousand, which has adapted itself to the new environment, and soon multiplies into myriads.

But although it is evident that in these 42 experiments only 8 or 10 flies became infective, a larger number were found in which development had proceeded to some extent—that is to say, the flies had become infected but not infective.

TABLE X.—*Number of Flies found Infected with* Trypanosoma Gambiense *in the Experiments with Laboratory-bred Flies.*

Experiment.	No. of flies used.	Experiment (positive or negative).	No. of infected flies found.	Result of injection of infected flies.	Remarks.
975	16	+	0	Positive.	12 remaining flies pooled.
1269	22	—	2	Negative.	
1452	90	—	1	,,	
1549	50	+	4	Positive.	
1566	35	+	9	Negative.	1 fly injected.
1602	50	+	5	Positive.	
1651	60	+	4		Flies not injected.
1672	28	—	2	Negative.	
1680	45	—	1	,,	
1693	50	—	2	,,	
1706	60	—	4	,,	
1712	50	+	1	,,	
1760	60	+	1	,,	
1769	60	—	2	Positive.	
1801	70	—	1		Fly not injected.

As each fly died it was dissected. In all 39 flies were found with trypanosomes in the alimentary tract—that is to say, about 2 per cent. We may therefore summarise this series of experiments by saying that 0·5 per cent. become infective and 2 per cent. infected. It must be noted, however, that a good deal of difference exists in different series of experiments, the proportion of infected flies rising sometimes to 8 or 10 per cent.

The Cycle of Development of Trypanosoma Gambiense *in* Glossina Palpalis.

To find out what occurs after a trypanosome has been swallowed by a tsetse fly, we fed laboratory-bred tsetse flies on an animal whose blood contained numerous trypanosomes, and at the end of various times killed the flies and dissected them. This was done for periods of one day, two days, three days, and so on for 56 days.

The flies were examined first in the fresh condition when the trypanosomes could easily be seen by their movement; afterwards stained specimens made for more minute investigation were examined day after day, and coloured drawings, at a magnification of 2000 diameters, made of all the different forms met with. The drawings of the trypanosomes found in the fore-gut, mid-gut, hind-gut, proctodæum, and salivary glands were kept separate, so that a series of drawings of trypanosomes taken from any one part, from the first day of infection to the fifty-sixth day, could be compared. More than 600 drawings were made in this way, so that it seems impossible that any important form could have been left out.

General Consideration Regarding the Development of the Trypanosomes in the Fly.

For the first three or four days after flies have had a feed of infected blood trypanosomes are found in them all. These are those originally ingested with the blood, and at the end of six or seven days when the process of digestion has been completed they are found to have disappeared from most of the flies—that is to say, it is only in a certain percentage that further development takes place. In one series we saw that this was as low as 2 per cent.; in another it rose to 8 per cent. In other words, in some 95 per cent. of flies which imbibe infected blood the trypanosomes simply degenerate and die out within the first few days. In some 5 per cent., on the other hand, the trypanosomes find conditions more favourable for development and increase, filling the whole of the fore-gut, mid-gut, and hind-gut with countless swarms of multiplication forms. How long this infection of the fly continues is not absolutely known. It is considered probable that in many cases it continues for the rest of the fly's life. In one case a fly was found to retain its infectivity for 96 days, but in a few cases there was evidence that an infective fly might in its lifetime lose its infectivity and become harmless.

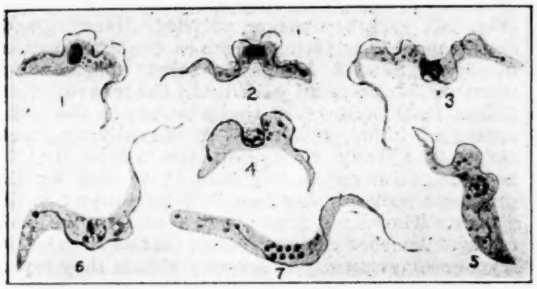
Types of Trypanosoma Gambiense *found in the Alimentary Canal of the Fly.*

It would serve no good purpose to describe separately, day by day, the variously shaped trypanosomes found in the different parts of the alimentary canal, since the different forms or shapes run into each other in such a way as to make any classification of them seem impossible. The results with regard to the number of trypanosomes found in the different parts of the alimentary canal were as follows:—

The proboscis.—In our experience *Trypanosoma gambiense* is never found in the proboscis of the fly, except immediately after an infected feed, when for a short time blood containing trypanosomes may be seen in the lumen of the proboscis.

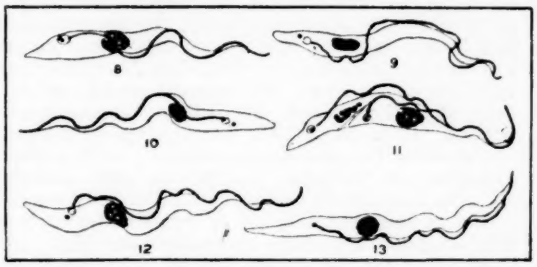
Proventriculus.—This part of the alimentary canal is sometimes found empty when the remainder of the gut is swarming.

FIG. 15.



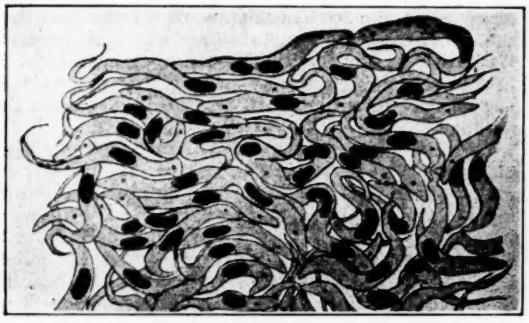
1-3.—Normal blood parasites (*Trypanosoma gambiense*).
4.—24 hours after ingestion by the fly.
5 and 6.—48 hours after ingestion by the fly.
7.—96 hours after ingestion by the fly.
1-7 represent the trypanosomes as they appear in the intestine of *Glossina palpalis* during the first few days.
1-3 are ordinary blood forms, as seen immediately after the fly has fed, and before any change has taken place.
4-7 represent the process of degeneration which takes place during the first four days. The body swells up, the nucleus breaks up, and the cytoplasm becomes vacuolated.

FIG. 16.



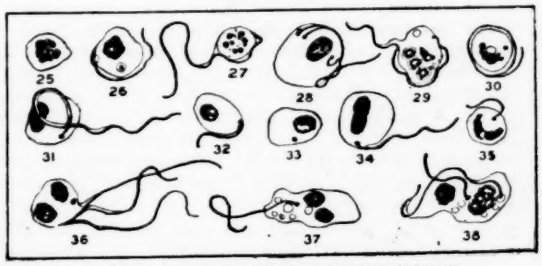
8.—*Trypanosoma gambiense* from fore-gut, 8 days after infected feed.
9.—*T. gambiense* from proventriculus, 14 days after infected feed.
10.—*T. gambiense* from fore-gut, 18 days after infected feed.
11.—*T. gambiense* from mid-gut, 25 days after infected feed.
12.—*T. gambiense* from mid-gut, 34 days after infected feed.
13.—*T. gambiense* from fore-gut, 44 days after infected feed.

FIG. 17.



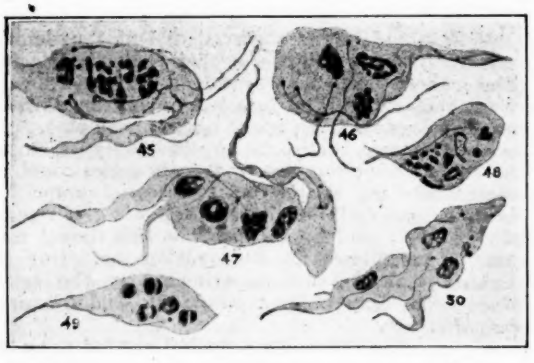
Part of a mass of *Trypanosoma gambiense* from the mid-gut.

FIG. 18.



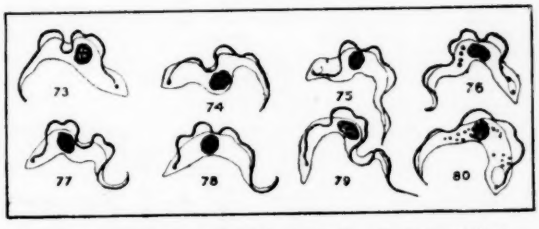
25.—*T. gambiense* from mid-gut, 8 days after infected feed.
26.—*T. gambiense* from fore-gut, 11 days after infected feed.
27 and 28.—*T. gambiense* from mid-gut, 16 and 17 days after infected feed.
29, 30, and 31.—*T. gambiense* from fore-gut, 17 and 18 days after infected feed.
32.—*T. gambiense* from hind-gut, 20 days after infected feed.
33 and 34.—*T. gambiense* from fore-gut, 24 days after infected feed.
35, 36, and 37.—*T. gambiense* from mid-gut, 24, 44, and 46 days after infected feed.
38.—*T. gambiense* from fore-gut, 46 days after infected feed.

FIG. 19.



45, 46, and 47.—*T. gambiense* from hind-gut, 10 days after infected feed.
48.—*T. gambiense* from fore-gut, 17 days after infected feed.
49.—*T. gambiense* from proventriculus, 30 days after infected feed.
50.—*T. gambiense* from mid-gut, 46 days after infected feed.
45-50 represent some of the more exaggerated types of degenerative forms. As will be seen from the drawings, they are huge, misshaped masses of protoplasm, multinucleated and, as a rule, multiflagellated.

FIG. 20.



73.—*T. gambiense* from salivary glands, 34 days after infected feed.
74.—*T. gambiense* from salivary glands, 42 days after infected feed.
75.—*T. gambiense* from salivary glands, 43 days after infected feed.
76, 77, and 78.—*T. gambiense* from salivary glands, 46 days after infected feed.
79 and 80.—*T. gambiense* from salivary glands, 56 days after infected feed.
When alluding, generally, in a previous part of this paper to the types of *Trypanosoma gambiense* found in the salivary glands, it was said that in the salivary glands, and here alone, the trypanosomes are found to revert to the normal type found in the blood. 73-80 illustrate this reversion. By comparing them with 1, 2, and 3 (Fig. 15), which represent normal blood trypanosomes, it will be seen that they are very similar to the short and stumpy form found in the blood.

Fore-, mid-, and hind-gut.—It is here that the greatest development of the trypanosomes is found. Among the extraordinary numbers and diversity of type it is difficult or impossible to find one's way. Generally speaking, the trypanosomes found during the first few days are merely degenerated blood forms. (Fig. 15.) After this there appears a type of trypanosome which remains dominant throughout the whole developmental period. (Fig. 16.) This is a long, moderately broad form, the protoplasm staining well, without granules or vacuoles, having an oval compact nucleus situated in the centre of the body, a small round micronucleus lying at some distance from the elongated snout-like posterior extremity. The undulating membrane is narrow and simple, and the flagellum proceeds little, if at all, beyond the protoplasm of the cell. The flagellum also appears very frequently to arise from a pink-coloured body situated near the micronucleus, an appearance never seen in the normal blood trypanosomes. This seems to be the normal developing type in the intestine of the fly. It is seen in all parts of the intestine and at all times. It forms masses of innumerable individuals alike in size and shape. (Fig. 17.) When a fresh supply of blood is taken by the fly, this type can be imagined to multiply with extraordinary rapidity. When the blood-supply runs low then this type can also be imagined as degenerating and disappearing just as rapidly. The host of divers forms which thus arise beggars description. Some are round or oval in shape, 3 or 4 microns in diameter, with or without flagellum, and from this simple form all shapes and sizes can be seen up to the huge shapeless mass of protoplasm, multi-nucleated and multi-flagellated. (Figs. 18 and 19.)

TABLE XI.—*To show Correlation between the Invasion of the Salivary Glands of* Glossina Palpalis *by* Trypanosoma Gambiense *and Infection by the Bite of the Fly.*

Experiment No.	No. of days after infective feed.	Bites of fly infective or non-infective.	Salivary glands.	Remarks.
1910	1	—	—	
1910	2	—	—	
1910	3	—	—	
1910	4	—	—	
1910	5	—	—	
1910	6	—	—	
1910	7	—	—	
1894	8	—	—	
1894	9	—	—	
2216	10	—	—	
1894	11	—	—	
1871	14	—	—	
1683	15	—	—	
1945	17	—	—	
1945	18	—	—	
1945	20	—	—	
1718	25	—	+	Blood-type not present.
1602	28	+	+	Blood-type present.
1801	30	—	—	
1945	31	—	—	
1760	34	+	+	" "
1769	36	—	—	
1712	42	+	+	" "
2034	43	+	+	" "
1549	44	+	+	" "
2034	44	+	+	" "
1706	51	—	—	
1566	53	+	+	" "
1651	56	+	+	" "

Salivary glands.—Trypanosomes did not appear in these glands until the twenty-fifth day, but that after this time they were usually present. (Fig. 20.) This invasion of the salivary glands is the most interesting phase in the development of Group A, and brings to mind the development of the malarial parasite in the mosquito. It differs in this, however, that whereas in the latter spores are found, which pass to the salivary glands across the body cavity, in the tsetse fly the trypanosomes apparently find their way by the proboscis and salivary duct or hypopharynx to the glands. They have never been found in the body cavity. Another curious fact is that as soon as the trypanosomes reach the salivary glands they revert to their original blood form and become infective. What causes or leads up to this reversion to the blood type in the salivary glands is quite unknown, but, as we shall see, the *Glossina palpalis* does not become infective until this invasion of the salivary glands has taken place. (See Table XI.)

From Table XI. it is seen that the salivary glands first became invaded 25 days after the infecting feed. In this case the monkey did not become infected. This may have been due to an accident, such as this particular fly not biting the monkey, or the invasion of the salivary glands only taking place after the fly had bitten, or to the fact that the blood-type of trypanosome was not present. With this exception all the other experiments, 12 in number, confirm the hypothesis that the fly does not become infective until the salivary glands are invaded.

Another point which comes out with striking clearness from this table is that in all the salivary glands from flies which gave a positive result trypanosomes similar to the short blood-type were invariably present. In this way it was gradually worked out and the discovery made that before *Glossina palpalis* and *Glossina morsitans* become infective with *Trypanosoma gambiense* or *Trypanosoma brucei* an invasion of the salivary glands and a reversion to the blood-type must take place.

Experiments to Ascertain if Trypanosoma Gambiense during its Development within Glossina Palpalis is Infective.

In Zululand it was observed, and at the time it seemed to be an astonishing fact, that when tsetse flies a short time after feeding on infected animals were chopped up and injected under the skin of healthy dogs no infection of nagana took place. It seemed strange that a fly, swollen out with blood, in which numberless active trypanosomes could be seen under the microscope, if injected under the skin of a susceptible animal, should not give rise to the disease. As I left Zululand at this time I was unable to follow this observation up. But in Uganda I carried out experiments on the same lines with *Trypanosoma gambiense* and *Glossina palpalis*.

If tsetse flies (*Glossina palpalis*) are fed upon an animal whose blood contains trypanosomes the parasites can be seen living and moving in the contents of the intestines of all the flies for a few days, and in a small percentage (2 to 8 per cent.) of the flies active trypanosomes may continue to be found swarming in their intestines on any day between the seventh and fiftieth day, or even longer.

A series of experiments was undertaken in Uganda to ascertain if *Trypanosoma gambiense*

retained its power of causing sleeping sickness when inoculated subcutaneously into monkeys during its period of multiplication within the fly, especially during the interval of some 20 or 30 days in which the bites of infected flies had been proved to be harmless. The flies were fed upon a monkey whose blood contained many trypanosomes. After a predetermined time had elapsed the wings and legs of the infected flies were cut off, and the bodies were either chopped up or brayed in a mortar with saline solution. In most instances the gut was proved by microscopical examination to be heavily infected with trypanosomes before the whole chopped-up fly or flies were placed under the skin of the experimental animal. Of 29 experiments carried out with *Glossina palpalis* and *Trypanosoma gambiense*, 18 gave a positive result; they were almost uniformly successful up to 18 hours after the infected feed.

Further experiments proved that this parasite only retains its virulence for a period of about 18 hours after it has been swallowed by the tsetse fly. It then loses its power of infecting animals for a period of some 22 days. This means that during their period of development in the tsetse fly the trypanosomes lose their virulence and do not regain it until the developmental cycle is completed.

Summary.

Trypanosomes taken into the alimentary canal of tsetse flies retain their shape and infectivity for some 18 hours. They then degenerate and lose their power of infection, and as a rule have disappeared altogether from the majority of the flies by the fifth or sixth day. In a small percentage of flies, male as well as female, the trypanosomes maintain their position, they continue to multiply, and in a short time swarm in the alimentary canal of the fly. These multiplication forms bear little or no resemblance to the original trypanosomes. After some 20 days the developing flagellates find their way into the salivary glands, resume their original blood form, and regain their infectivity.

THE RESERVOIR OF TRYPANOSOMA GAMBIENSE (CONGO SLEEPING SICKNESS).

We have seen that in *Trypanosoma brucei*, the cause of "Nyasaland sleeping sickness," the reservoir of the virus was undoubtedly the wild game, and that in all probability man played a very small part, if any, in its spread. I have already described *Trypanosoma brucei* as essentially a parasite of animals, and *Trypanosoma gambiense* as a parasite of man. In Uganda cases of sleeping sickness were limited to the edge of the lake and the islands; I say *were* because the epidemic has died out. There was formerly a great deal of trade intercourse between the islands and the mainland. Under the shade of the trees, on the shore of the lake, the natives met, and here the fly was thickest. Now, we know that in the sleeping sickness area in Uganda anything from 20 to 50 per cent. of the lake shore population had sleeping sickness trypanosomes in their blood, and it therefore appeared extremely probable that the fly conveyed the virus from native to native.

We believed at first in 1903 that man was the only reservoir of practical account, and that if he was removed from the fly area the fly would soon—within a few days—become non-infective. When we returned to Uganda in 1908 we were much surprised to find the fly still infective, although the native population had been removed from the lake shore for some months. It was evident, therefore, that the fly had some other reservoir from which to draw the virus, and experiments were instituted to throw light on this. The cattle were first examined. These animals, as we have seen, are practically immune to sleeping sickness—that is to say, they show no signs of illness, but it was possible the trypanosome might live in their blood and be capable of infecting flies without affecting the health of the cattle.

Cattle as a Reservoir.

On Sept. 9th, 1909, an ox was inoculated with a quantity of blood containing large numbers of the parasites. The blood of the ox was examined daily, and 18 days after the injection was found to contain the trypanosome. Its identity was established by injecting a healthy monkey with some blood from this ox. The monkey showed *Trypanosoma gambiense* in its blood on the sixth day. Cattle are therefore capable of being infected with sleeping sickness by the injection of infected blood, although they show no signs of illness. Cattle were also infected by the bites of artificially infected flies. Next, freshly caught flies brought up to the laboratory from the lake shore were fed on healthy cattle. In the first experiment 2195 freshly caught flies were fed on an ox during 16 days, when the animal was found to be infected. In the second 1370 flies, and in the third 459 gave a positive result.

The next question to be asked was, Is it possible to infect tsetse flies by feeding them on these infected cattle, and afterwards to transmit the disease by means of these flies to healthy animals? Five experiments were carried out. Two of them were positive. It was therefore proved that laboratory-bred flies can be infected by feeding them on infected cattle, and afterwards the disease can be transmitted to healthy animals by means of these flies.

Finally, it had to be ascertained whether it was possible to find in the sleeping sickness area cattle which had been naturally infected. Seventeen cattle from various sources were examined with this point in view. Most of them came from places where the tsetse flies were numerous. In one out of the 17 the parasite was found. This ox came from the island of Kome in Lake Victoria where sleeping sickness was prevalent and where tsetse flies abound. A small quantity of its blood injected into a healthy monkey gave rise to sleeping sickness in the monkey and showed that *Trypanosoma gambiense* was really being dealt with.

The conclusion to the whole matter, then, was that in addition to man cattle may act as a reservoir of the virus of sleeping sickness.

Antelope as a Reservoir.

We next turned our attention to antelope. At this time, the beginning of 1910, man and his domestic animals had been removed from the lake shore of the mainland for some two years, and from the islands since the previous September. The effect of this depopulation had been to make an area along the northern shore of the lake virtually a game reserve, in which water-buck, bush-buck, reed-buck, Speke's tragelaphus, hippopotami, wild pig, and other game abound. Before this time we had a strong preconceived idea that cattle and antelope

were immune to sleeping sickness, and these preconceived ideas are stubborn things. But after the cattle experiments we set ourselves to ask the same questions regarding antelope. Eleven antelope in all were employed in this experiment—4 bush-buck, 6 reed-buck, and 1 water-buck. A cage of flies which was known to contain an infective fly or flies was fed on each animal daily for several days. Table XII. gives the results.

TABLE XII.—*Development of* Glossina Palpalis *in Antelope.*

No. of experiment.	Species of antelope.	No. of days infected-flies fed.	No. of days before trypanosomes appeared.	Result.		Remarks.
				Positive.	Negative.	
2328	Bush-buck.	5	—	+		Trypanosomes never seen.
2357	Reed-buck.	12	25	+		
2359	,,	6	11	+		
2371	Bush-buck.	8	12	+		
2372	,,	6	8	+		
2378	Water-buck	8	—	+		Trypanosomes never seen.
2427	Reed-buck.	6	7	+		
2428	Bush-buck.	13	—	+		Trypanosomes never seen.
2429	Reed-buck.	8	9	+		
2431	,,	6	10	+		
2445	,,	7	8	+		

These experiments prove that antelope may readily be infected with sleeping sickness by the bites of infective flies.

The next question was, Can these infected antelope transmit the infection to clean laboratory-bred flies, and if these flies become infected can they transmit the virus to susceptible animals? Clean laboratory-bred *Glossina palpalis* were fed for several days on an infected antelope. After an interval of starvation of 24 hours or more the flies were transferred to healthy animals and fed daily. When the healthy animal showed *Trypanosoma gambiense* in its blood the experiment was stopped, and the surviving flies were dissected as soon as possible. The result of 24 experiments carried out on these lines is given in Table XIII.

TABLE XIII.—*Result of Feeding Laboratory-bred Flies on Antelope Infected with Sleeping Sickness.*

No. of clean flies used.	Species of antelope flies fed on.	No. of days flies fed on antelope.	No. of days before flies became infective.	Result.	Remarks.
160	Bush-buck 2328.	12	29	+	Buck 2328 never showed *T. gambiense* in blood. In spite of this flies fed on it became infected 55 days after the buck's infection.
100	,,	8	28	+	
70	,,	6	29	+	
100	,,	8	39	+	
100	Reed-buck 2357.	7	41	+	Buck 2357 showed *T. gambiense* in its blood for 5 days only.
100	,,	8			
100	,,	5			
200	Reed-buck 2359.	6	44	+	Buck 2359 showed *T. gambiense* in its blood for 7 days only.
50	Bush-buck 2371.	6		—	Buck 2371 showed *T. gambiense* in its blood for 3 days only.
60	,,	6	29	+	
100	Bush-buck 2372.	8		—	Buck 2372 showed *T. gambiense* in its blood for 2 days only.
95	Water-buck 2378	6	30	+	Buck 2378 never showed *T. gambiense* in its blood.
60	,,	6		—	
50	,,	4		—	
110	Reed-buck 2427.	6	24	+	Buck 2427 showed *T. gambiense* in its blood for 4 days only.
60	,,	4	33	+	
100	,,	6	30	+	
50	Bush-buck 2428.	7	28	+	Buck 2428 never showed *T. gambiense* in its blood.
50	Reed-buck 2429.	4	27	+	Buck 2429 showed *T. gambiense* in its blood for 3 days only.
100	,,	6	49	+	
55	Reed-buck 2431.	3	28	+	Buck 2431 showed *T. gambiense* in its blood for 4 days only. In spite of this, flies fed on it became infected 81 days after its infection.
90	,,	6	36	+	
100	,,	5	43	+	
50	Reed-buck 2445.	4		—	Buck 2445 showed *T. gambiense* in its blood for 6 days only.

The most significant of these experiments is the one in which it is shown that 55 days after the last feed of the infected flies on bush-buck 2328 the blood of the buck was still capable of infecting clean laboratory-bred flies, although *Trypanosoma gambiense* had been so scarce in the blood that they had never been seen microscopically.

These experiments show that antelope of the water-buck and bush-buck species, when infected with the trypanosome of sleeping sickness, can transmit the infection to clean laboratory-bred *Glossina palpalis*. The infected antelope's blood was in one case capable of giving rise to infection for at least 81 days, and in another for at least 55 days. These experiments further show that the flies when infected are capable of transmitting the disease to susceptible animals.

From these experiments on antelope the curious fact seems to emerge that a higher proportion of flies become infected by feeding on infected antelope in whose blood the parasites are scanty than, for example, on infected monkeys, whose blood swarms. Another curious fact is that even when trypanosomes were never found by microscopical examination in the blood of an antelope, flies fed on that antelope became infected. It would almost lead one to believe that the trypanosomes exist in the blood of these animals in some other less easily recognisable form than the ordinary adult trypanosome form.

The next thing we set ourselves to do was to find out if the antelope living in the fly area are naturally infected with sleeping sickness. Positive evidence on this point would naturally complete the chain of evidence proving that antelope living in the fly area may act as a reservoir of the virus of sleeping sickness. So far it had only been proved that they were potential hosts. The easiest method by which it could be proved that they are naturally infected would be the old one of shooting the animals and at once sending samples of their blood into some healthy area where the blood could be injected into healthy susceptible animals. But those who know the local conditions in Uganda will recognise the difficulty of doing this. The cover is so thick at the edge of the lake that it is exceedingly difficult to see the game, the sun is almost unbearably hot, the country very difficult, and the exposure to the bites of the fly very great. It may be said at once that we were only able to shoot five antelope on the lake shore. The blood of these when injected into susceptible animals gave negative results. A large drive was being organised which might have thrown the desired light on this subject, but unfortunately the Commission was obliged to leave the country before the drive could take place. It was therefore perforce left to a later worker to solve this difficult problem.

In 1911 Mr. H. L. Duke took the question up. Four years had now elapsed since the lake shore was depopulated, and two years since the islands had been emptied of their population. He chose the uninhabited island of Damba for the experiment. This he did because the Commission

had shown in 1910 that the flies on the island were still infective, and again the same result was obtained in May, 1911, by Dr. G. D. H. Carpenter. With the exception of certain patches of papyrus, practically the whole shore-line of the island swarms to a greater or less extent with fly. At one part there is the famous fly-beach from which for several years some thousands of pupæ have been brought monthly to the sleeping sickness camp at Mpumu. The only species of antelope found on the islands of Lake Victoria is the sitatunga (*Tragelaphus spekei*), a species of bush-buck adapted for living in marshes. Mr. Duke shot four sitatunga on the island of Damba, and from these *Trypanosoma gambiense* was obtained. I cannot say whether all four antelope harboured the parasite, because the blood of the first two was injected into one monkey and the blood of the last two into another. Both monkeys showed the *Trypanosoma gambiense*. Mr. Duke examined these trypanosomes with meticulous care in order to exclude any possible source of fallacy, and there cannot be any reasonable doubt that the sitatunga on Damba Island were acting at that time as a reservoir of this parasite.

Another proof that the trypanosome found in the sitatunga was really *Trypanosoma gambiense* has lately been given by Mr. Duke. He states that two of the fly boys who have during the last three years worked with Dr. Carpenter on the islands have developed sleeping sickness of the Uganda type, and trypanosomes have been demonstrated in their glands. These boys have only been exposed to the bite of *Glossina palpalis*, as they had for 18 and 30 months respectively resided on the lake shore and islands, where there are no other species of tsetse fly. This shows conclusively that *Trypanosoma gambiense* still exists in these lake shore and island flies, five years after the removal of the population, and is another striking proof that the antelope are acting as a reservoir. Taking everything into consideration, then, we may look on it as proved that the antelope on the shores of Lake Victoria act as a reservoir of the virus of sleeping sickness, and that this accounts for the fact that the flies have retained their infectivity in spite of the removal of the native population from the lake shore and the islands.

The prophecy of the Commission that the fly would become harmless shortly after the natives were removed from the lake shore has unfortunately proved wrong, and before the islands are repopulated some other measure will have to be taken to get rid of the fly danger.

DONATIONS AND BEQUESTS.—The late Mr. William Balls, of Tynemouth, left by will £1000 to the Tynemouth Victoria Jubilee Infirmary.—By the will of the late Mr. William Hurst, of Wakefield, the testator left £1000 to the Clayton Hospital at Wakefield.—By will the late Mr. Archibald Anderson, of London and Bournemouth, has left £1000 each to the Hospital for Paralysis and Epilepsy, Queen-square, W.C., and the London Homœopathic Hospital.—The Chelsea Hospital for Women has received a further sum of £1000 from the executors of the T. S. Whitaker estate towards the rebuilding fund.

DEATH OF MR. R. D. G. HALL, LITTLEHAMPTON.—The death occurred at Bexhill, on June 27th, of Mr. Robert Dunsterville Grant Hall, who had resided at Littlehampton for 40 years. He became M.R.C.S. Eng. in 1878, and as a ship's surgeon had travelled nearly all over the world. At one time he was private surgeon to H.H. Maharajah of Dhar. Mr. Hall was 58 years of age.

LOSS OF PERSONALITY FROM "SHELL SHOCK."

BY ANTHONY FEILING, M.D. CANTAB., M.R.C.P. LOND.,

TEMPORARY ASSISTANT PHYSICIAN AND CASUALTY PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL; ASSISTANT PHYSICIAN TO THE METROPOLITAN HOSPITAL AND THE HOSPITAL FOR EPILEPSY AND PARALYSIS, MAIDA VALE.

THE present campaign in Flanders has made such unexampled demands on the nervous system of the soldier that we are not surprised to meet with many cases of neurasthenia, hysteria, and various disturbances of the special sense organs. Numerous cases of blindness, deafness, dumbness, and loss of memory have already been reported, as well as the more common cases of functional paralysis of a limb or limbs, and all have aroused considerable interest and discussion as to their nature and appropriate treatment. The majority of cases of loss of memory hitherto recorded have been generally of a more or less transitory nature; moreover, the period of time covered by the amnesia has been, as a rule, only that just before, during, and immediately following the trauma, whether such were physical or mental, or both.

The case which I wish to record here is one of exceptional interest. It amounts, in fact, to a complete dissociation or obliteration of personality. The term "double personality" is hardly applicable, as will appear from subsequent remarks. It may be regarded as a case of loss of memory or amnesia of such a degree that all conscious memories of the patient's life, as well as the countless memories forming his knowledge of letters, objects, and life in general were completely suppressed. In order to follow the case more clearly and the better to appreciate the interesting problem presented by the patient it will perhaps be best to take the case exactly as it appeared to my observation.

The patient, aged 24, a bandsman in the 2nd Battalion Wiltshire Regiment, was admitted to the Hospital for Epilepsy and Paralysis, Maida Vale, on Jan. 21st, 1915, under the care of Dr. H. Campbell Thomson, who later kindly transferred him to my charge. From information supplied it appeared that the history was as follows. On an uncertain date—some time at the end of October, 1914—the patient was buried in a trench near Ypres. He was rescued and eventually transferred to the 2nd Western General Hospital, Manchester. Major Wilson has kindly supplied me with the following note as to his condition at that time:—"He speaks quite sensibly, understands, and remembers anything which took place since he was buried, but as regards matter previous to that his mind was blank. He was admitted to this hospital on Oct. 31st, 1914. He did not know his own father or relatives. He was quite able to speak while here, but was slightly deaf. This defect disappeared."

On physical examination he appeared perfectly healthy. The only abnormality observed was a certain nervous twitching of the eyelids and facial muscles. When questioned he gave the following peculiar account of himself. "I came to myself in a strange place which I was told was Manchester. I could not remember anything at all. I think I could speak all right." Attention was good; he was polite, and seemed to try to answer before saying "I can't remember." There was no defect of speech. He could read and write quite well; he

recognised and named correctly all common objects. He made no complaint of any physical symptoms. He stated that he slept well without dreams.

Physical examination was quite negative. No sign of any organic disease of the nervous system was found. On all subjects revelant to his life in hospital and his experiences since he came to himself in Manchester his statements were perfectly coherent and straightforward. He stated that he did not know his parents, but took them on trust, having been told that they were his parents. He had been at home at Winterslow for some time since leaving the hospital at Manchester, but did not recollect that he had ever seen the place before. As an example of some of his answers the following may be quoted. "I don't know if I ever went to school." "A bayonet is like a knife; you see soldiers with them on their rifles. I've never seen a bullet." "I went to church at Winterslow, but had no idea what they were doing. The choir is—— I don't know. I've never seen one. The clergyman wore a white robe." In reading he would not infrequently meet words which he did not recognise. Again in writing he would stop and ask how a work was spelt. His memory for recent events was certainly not good. Thus he would have forgotten, for example, what he had done when he had been out the day before. He volunteered the statement that the only thing which he had spontaneously recognised since his injury was a tune which he had heard played at a concert. This was an air from *La Bohème*.

Numerous attempts, all quite unsuccessful, were made to try to catch him out. In the course of conversation a subject would be gradually introduced with which he could not reasonably have been expected to have been acquainted since the injury. In such cases he always replied simply, "I don't remember." In manner he was cheerful and pleasant, and as a patient always agreeable and easy to deal with. On the whole he appeared to be happy and contented, but occasionally expressed his disappointment at not being able to recall his memory. As he often went out of the hospital for motor drives and other excursions, numerous incidents occurred, due to his ignorance of all that he had not seen since his injury. Some were distinctly comic. On one occasion he went to the Zoological Gardens. He had been told previously by one of the other soldiers in hospital that an elephant was a "little furry animal," and had been shown a toy one about six inches long. His astonishment at seeing the real article may be well imagined. On the same occasion he tried to stroke one of the lions, being only prevented by one of the attendants from putting his hand through the bars of the cage.

The war had no interest for him. He did not know, nor did he care to ask, what it was all about. The one subject in which he professed himself interested was music. He said that he had been told that when in the band he used to play the euphonium and string bass. He certainly appeared to enjoy a concert more than any other form of entertainment.

As he seemed to make no progress towards recovery it was decided to try the effect of hypnotism. Accordingly on March 10th I hypnotised him for the first time. He proved an easy subject. At first powerful suggestions were made to him, while under the effect of hypnosis, that on awakening his lost memory would gradually return. These were entirely without effect. At the second sitting on March 11th I first made the experiment of questioning him on the events of his previous life as well as his experiences on active service. To my delight he answered all my questions readily, and in this way I was eventually able to reconstruct the whole story of his life. Considerations of space forbid me to detail all the numerous conversations which took place. It is my intention here only to give a brief outline of his story as it was revealed under hypnosis, and to describe the very remarkable condition discovered.

During the first few sittings the patient lay on the bed with his eyes closed. In this state he answered all the questions put to him, and volunteered many details of incidents occurring in his past life and in his experiences on active service in Flanders. He was born at Winterslow, near Salisbury, and was one of a family of three brothers and one sister. He first attended school at Winterslow and later at Trowbridge, where his parents had moved. At the age of 13 he ran away from school because he was "tired of it," and went to live with his brother at Devizes. Here he helped his brother in the work of a photographer's business. From that time onwards till he enlisted in the army he pursued various trades, none of them apparently with any very marked success, being in turns a baker, a painter, and an odd-job man. Finally he enlisted at Salisbury in the 2nd Wiltshire Regiment. He was at first quartered at Gosport. After three months in the ranks he passed into the band, though he had never learnt any music before. He played the string bass and on the march the euphonium. After a year at Gosport the regiment was ordered to Gibraltar. He was still there when the war broke out. His regiment was at once ordered home, and went into training in the New Forest for nearly two months with the 7th Division. Towards the end of October, 1914, they were ordered abroad.

At this time he took part in the first battle at Ypres, and for about ten days experienced very severe trench fighting. Finally, on a certain day, the exact date of which is unknown, the trench in which he was fighting was blown in by a high-explosive shell and he was buried in a mass of mud and débris. He stated that he remained thus buried for about 12 hours when he was dug out at night. His father added the information that he was unconscious for 24 hours and deaf and dumb for three days. From the ruined trench he was transferred to a clearing hospital and thence to another hospital. Eventually he was taken to the hospital at Manchester, where, as we have seen, he "came to himself." The above account is, of course, only the barest outline of his story, as it was told under hypnosis. A few more details will be found in the appendix.

During the first few sittings he lay on his bed with his eyes closed. Later, in response to suggestions, he opened his eyes, sat up, and behaved exactly as a normal person. We would then conduct our conversation in any room handy for the purpose; he would smoke and talk absolutely at his ease. In fact, no one unacquainted with the facts would ever have believed that he was under the influence of hypnosis. Although at first his answers and account of his experiences were brief and not accompanied by any very obvious desire to volunteer information, he became later much more communicative. Indeed, his experiences were most graphically described, with quite a wealth of detail. Various episodes were narrated in a style positively vivid. His descriptions of some of the fighting and

of the bayonet charge in which he took part, and the horror of a bombardment by high-explosive shell, were accompanied by very manifest expressions of emotion, and aroused in the listener a lively appreciation of the terrible experiences through which he had passed. The most interesting fact, however, which came to light in the course of our conversations was that when hypnotised he returned completely to the personality which possessed him immediately previous to the moment of awakening in Manchester. Thus on first seeing me (when he was first commanded to open his eyes under hypnosis) he declared that he had never seen me before, and in this state he never knew my name, although in his ordinary state he knew me well and would always address me by name. He maintained that he was then in Manchester, was completely puzzled as to his surroundings in the hospital at Maida Vale, and when taken on to the balcony and shown the Edgware-road manifested his astonishment and dismay in a manner almost comical.

This condition persisted throughout the time of his stay in the hospital. Persons seen and known by him in his ordinary state were always complete strangers to him in his hypnotic state. In the latter state he believed the time of the year to be November; he also said that he had never been in London. From what has been said it will be understood that we were dealing with two completely distinct personalities. No. 1 was his personality since the date of his awakening in Manchester; No. 2 was his old personality, endowed with all the memories of his past life and with the more recent and lively memories of experiences on active service in Flanders. There were several points of difference between the two personalities which were of more than usual interest. In state No. 1 his manner was somewhat jaunty and inclined to be cocksure. In state No. 2 he appeared more modest and altogether less loud in manner.

An alteration in manner had also been noticed by his father. His speech was different. In state No. 1 he spoke with a faint but distinct Lancashire accent. In state No. 2 there was no trace of Lancashire, but his speech much more resembled the West Country dialect. I am aware that this statement may be received with a certain amount of scepticism, but I can vouch absolutely for its truth, and it was confirmed on more than one occasion by several competent observers. His writing also differed slightly. It is a matter of some interest to relate how this last discovery was made. When all suggestions made during hypnosis that he would recover his memory had failed, I asked him to write down the answers to my questions. On awaking him, I then showed what he had written in hypnosis. His reply was to laugh and say, "Why, that's not my writing." The next step was naturally to make him write the same sentences again. On comparing the two writings various minor points of difference were at once apparent. A careful comparison, however, would have certainly suggested the conclusion that they were both the work of the same hand. A further point of interest was that he held the pen in a different way.

On one occasion he was hypnotised in the presence of his father, whom in his ordinary state he regarded with no very great interest and certainly with no obvious affection. On being told to open his eyes, his attention was directed to the presence of his father. He immediately jumped up, and with every sign of pleasure exclaimed, "Why, dad, how did you get here?" He then walked across the room, shook his father warmly by the hand, and kissed him with a degree of spontaneous affection previously entirely absent. His father was much affected, and believed for the moment that his son had "come all right again."

Since the patient had been accustomed to play the euphonium while in the army, I obtained one for him. In his ordinary state he was able to play it, though very imperfectly. This, however, was the only accomplishment which he had retained from his previous life. He was then hypnotised and given the instrument to play. He certainly played then with a greater amount of assurance, but confessed to being out of practice. In his ordinary condition he was allowed to practise on the instrument, and rapidly become as expert as he was in the hypnotic state.

At the end of our sitting I usually told him to close his eyes and rest for a time. After a few minutes I woke him by the previously arranged method of counting three. He would wake slowly and painfully, rubbing his eyes and stretching himself. There was always a complete ignorance of what had taken place during hypnosis. He said that he thought he had been asleep. If he were left for some time before being waked he would experience dreams obviously of a disturbing character. The hands were clenched and the arms thrown across the body in an attitude of defence, with the lips drawn back in a snarling expression. Words and short sentences were muttered, such as "Give it them," or "Got him," and other similar expressions. The whole attitude illustrated quite obviously some re-enacted drama of his fighting. After being awakened he was always very sleepy. He would return to the ward, throw himself down on his bed, and sleep heavily for an hour or more. He would then wake up apparently refreshed. Often he volunteered the information that he had had bad dreams about Germans, and that he only had them after the "treatment." On one occasion I followed after a brief interval to the ward. He was lying across the bed, his head almost on the floor on one side, his legs dangling over the other side. The face was flushed and sweating. The teeth were clenched, the lips drawn back, one arm was held across the face, the other, with clenched fist, held out in front of him. He was muttering to himself, and snatches of words and sentences could be heard. Once or twice he suddenly struck out with his fist at an unseen enemy. This condition lasted for about ten minutes, when he gradually seemed to recover, worked himself back into a more natural position on the bed, and fell into a quiet sleep.

Altogether about 25 sittings were held. It was realised, however, that no improvement was taking place, and as a certain amount of psychical disturbance seemed to be caused, further hypnotic treatment was abandoned. He was discharged from the hospital on May 5th. His condition was practically unaltered, except in so far as he had learnt more and was better able to take care of himself. But there was still a complete loss of his old personality. I saw him again on May 25th. There appeared to be no change at all. In the interval he had been at home, but had seemed to have no recollection of his previous life in the place and showed no inclination to recognise old friends. At times he was said to be moody and irritable, but on the whole appeared happy and contented. He was invalided out of the service by a medical board on May 28th.

I have thought it best to report the case exactly as it presented itself to me. A brief outline, therefore, of the patient's story has been given and a few of the more interesting points discussed.

The explanation of the case presents greater difficulties. Since I can claim no special psychological training or experience, I have avoided as far as possible the use of many psychological terms. If, therefore, in an attempt to analyse the case I display my ignorance of correct psychological terminology I must crave the indulgence of the reader.

The case is obviously one of more than a mere ordinary amnesia, and yet it seems to me that the title of double personality is hardly justified. For the second personality (really in point of time the first) was only called out by hypnosis, and unless this or some other similar means had been employed would probably have never been brought to light. A true double personality can pass from one to the other state without the intervention of any outside influence. Again, in many cases of double personality, No. 1 is conscious of the existence of No. 2, and *vice versâ*. In the present case there appeared to be absolutely no connexion between the two, if we except the common ability to play the euphonium. I have said that it is more than a mere amnesia, but the difference appears to be one of degree rather than of kind. Any profound psychic trauma is frequently able to produce an amnesia more or less extensive. There is no particular reason why this should not be so complete as to constitute a loss of personality. And it is that explanation of the present case which I would venture to suggest. Hence I have entitled it "A Lost Personality," rather than a double personality.

APPENDIX.

In order to simplify the general account of the case I have omitted in the text any detailed reports of the conversations held during hypnosis. In this appendix I will try to embody a few of the patient's experiences. The accounts are not, of course, strictly verbatim, and are also, I fear, very disconnected. But from notes made at the time it has been possible to reconstruct briefly some of his stories. The following is, roughly, his account of what happened to him after he had been buried in the trench.

I was dug out at night and taken to a dressing station; it was cold and dark. Then I went on to a hospital at Ypres; it was really a convent, and there were a lot of nuns about, dressed in dark robes with white hats; some of them spoke English. I stopped there for a night and a day. There were a lot of wounded there. Then I was sent on by train; I lay down all the way on a seat in the carriage; we took the whole day to get to ——, and kept on stopping at stations. I was at —— about ten days; I don't know what hospital it was, but there were English doctors and nurses. It was near the harbour. We came over to England in a hospital ship, the *Arethusa;* I went straight on to Manchester by train. The hospital there was really a school turned into a hospital.

Here is a brief account of a scrap with some Uhlans.

Q. Did you see any Uhlans?—Yes.

Q. What are they like?—They've got no guts. One time 30 of them were against 8 of us infantry, and they "done a bunk." Their horses were not bad. They wore helmets with a double eagle on the front.

He was asked to describe the country round the trenches and to give some account of the fighting there.

It's agricultural land, ploughed fields. There were two farms in front of us. One day we saw an old cow between our trenches and the Germans, and we all had pot shots at it. Once the Germans rushed our trenches; we killed hundreds, bayoneted them mostly, and hit them over the heads with the butts of our rifles. It was hellish. The British were all shouting. I saw a German officer behind with a sword and a revolver. I saw a lot of French soldiers, too; they wore long coats with the corners turned back; some had blue and some had red trousers. The French Dragoons are like Life Guards, with big steel breastplates and brass helmets with a long plume; they carried swords and rifles and a few had lances.

He was asked to mention some of his impressions in Belgium and what he thought of the manners and customs of the French and Belgians.

We cut off all our buttons and gave them to the French girls. The French cigarettes are muck; you buy them in little blue packets; the tobacco is rather dark and strong. When we bivouacked on the march at night we were not allowed any lights, but you could smoke by digging a hole in the ground with your bayonet and smoking into that.

The following are some of his remarks about his stay at Gibraltar.

Gibraltar's like a great big rock; the steep side looks towards Spain. I was in barracks there, and used to spend a lot of time in the band-room practising. Sometimes we bathed in the sea. I went to Spain two or three times, and saw some bull-fights; they were very exciting, but rather too cruel for my taste. They used to kill six or seven bulls a day. The horses got fearfully cut about.

Devonshire-street, W.

THE RISKS FROM TUBERCULOUS INFECTION RETAINED IN BOOKS.

BY HENRY KENWOOD, M.B. EDIN., D.P.H., F.R.S.E.,
CHADWICK PROFESSOR OF HYGIENE, UNIVERSITY OF LONDON, ETC.;
AND
EMILY L. DOVE, M.B. LOND.,
PUBLIC HEALTH RESEARCH STUDENT, UNIVERSITY COLLEGE, LONDON.

RECENTLY our advice was sought upon the policy of a large public library in reference to the books returned from houses in which cases of consumption had been recently notified, and so a few experiments were undertaken as a guide to the form which that advice ought to take. These experiments were designed to test the risks of transmission of the disease by books.

The most essential requirements of such experiments are that all the conditions of actual practice are reproduced as faithfully as possible, save that the probable dosage of infectious organisms should be exaggerated, so that our conclusions should cover "a margin of safety." No artificial conditions must be introduced and no actual condition insufficiently allowed for. Therefore, as artificially cultivated organisms generally differ in their resistance from corresponding organisms taken direct from human media, it is necessary that in such experiments the books should be infected directly from a human sufferer. Fortunately, in the tubercle bacillus we have an organism the virulence of which at any time can be demonstrated by inoculation into lower animals, since it is certain that some strains of organisms under saprophytic circumstances become harmless to humans through much attenuation or loss of virulence. The tubercle bacillus is a facultative anaerobe, capable of surviving in the closed pages of a book as well as upon the cover.

There does not appear to be on record any case of tuberculosis which was held to have been transmitted by means of books; but this circumstance does not exclude the possibility of such infection,

and several scientific inquirers into this subject have concluded that books may possibly be the means of conveying the disease.

In 1899 Flügge sought to show that consumptive patients spread infection by means of the minute droplets of tuberculous sputum discharged ("sprayed") in the act of coughing, sneezing, and speaking. Although this theory has not met with general acceptance, as one which satisfactorily explains the source of much human infection, and while it is seriously discounted by the more recent experiments of Chausée and others, it is possible that some infection may thus be transmitted. If this is a fact, there would be danger in a re-issue of public library books which had recently been read (and therefore sprayed) by consumptive readers, and the danger in this case would arise from the inhalation of dried tubercle bacillus.

Although it is rare to find tubercle bacilli in the saliva of the consumptive patient, the habit of wetting the thumb to facilitate the turning of pages is very likely to convey infection to books, for the patient's hands become infected from the handling of handkerchiefs, &c. Subsequent readers indulging in the same practice, and mostly touching the pages in about the same place, may possibly convey infection to their mouths.

There is experimental evidence that if tubercle bacilli survive at all, their virulence is lost in a few days after drying and exposure to light; and, speaking generally, infective organisms (however introduced) which survive in books must be few in number and of reduced vitality, owing to drying, exclusion of air, or a saprophytic existence at unfavourable temperatures. Therefore, it would seem that the small dosage and low virulence of infected material, introduced mostly by the mouth, would not be likely to infect a human being, even though in some cases of tuberculous infection the material collected from the soiled page might lead to the infection of a guinea-pig. The results of our experiments tend to bear out this assumption; but if the facts were otherwise the failure of public libraries and schools to disinfect books recently read by consumptives could scarcely be expected to furnish evidence of the harm where such a disease as consumption is concerned.

The working details of the following experiments were carried out, almost entirely, by Dr. Dove. In the first experiment small clean sheets of paper were issued to patients who were suffering from advanced pulmonary tuberculosis with numerous tubercle bacilli in the sputa; and the patients were asked to hold these in front of the face, and distant about 1 foot, when they coughed. After 24 hours the sheets were collected, folded so that the surface coughed upon was the internal surface, and brought to the laboratories. The papers were kept for two days under a large bell jar, when the infected surfaces were thoroughly washed (under suitable precautions) with sterilised water, and the washings (about 10 c.c.) of each paper were inoculated into the peritoneal cavity of a guinea-pig. In all, 15 pieces of paper were so exposed to the infection of 15 different sufferers, and as many guinea-pigs were inoculated from the washings obtained. Within from six weeks to two months after inoculation the guinea-pigs were submitted to a careful post-mortem examination.

The results of this experiment were as follows: One guinea pig died four days after inoculation, and, of course, the post-mortem examination furnished no evidence of tuberculosis. Eliminating this guinea-pig, eight were found to be definitely infected with tuberculosis and six to be quite free from the infection.

This experiment was a very severe test by reason of the exceptionally large amount of recent infection collected upon a small surface, the whole of which infection was removed and inoculated. For a period of 24 hours a patient when coughing mostly coughed on to this small surface, and yet 6 (43 per cent.) of 14 guinea-pigs escaped infection.

The next experiment aimed at discovering whether such paper surfaces, similarly infected, would retain active infection after a period of one month. Therefore 12 more small sheets of paper were issued to patients suffering from advanced pulmonary tuberculosis with numerous tubercle bacilli in the sputa, and these patients were also asked to hold the papers in front of their faces, and distant about 1 foot, as often as possible when they coughed, for a period of 24 hours. The collected sheets were folded so that the surfaces coughed upon became the internal surfaces and were brought to the laboratory, where they were kept under a large bell jar for 31 days. At the end of that period the infected surfaces were separately washed in sterilised water, and the washings (or a part of them) were inoculated into guinea-pigs. Of the 12 guinea-pigs inoculated, 6 were inoculated into the peritoneal cavity and 6 received 4 c.c. of the 10 c.c. of washings into the left thigh.

The results of this experiment were as follows: One guinea-pig died a week after inoculation and another about five weeks afterwards. In neither case was there any post-mortem evidence of tuberculosis, and it was not possible to discover any tubercle bacilli in the glands. The other 10 guinea-pigs remained quite healthy two months after inoculation.

It therefore looks as if the above experiments warrant the conclusion that although a library book may be grossly infected by the cough of a tuberculous patient, and while that infection may remain active for at least a few days, the infection does not survive a period of one month.

With these results before us, it was judged desirable to ascertain whether books issued to phthisical sufferers from public libraries retained infection *in actual practice*, and, if so, to what extent. With this object in view eight books returned to the Stoke Newington Public Library, after having been recently read by notified cases of phthisis with tubercle bacilli in sputa, were examined. Guided by the previous experimental work of others, it was concluded that the parts of a book most likely to retain infection are dirty (especially thumb-marked) pages and the cover. Therefore the most dirty pages of each book and portions of the covers were carefully washed in normal saline solution, the washings centrifugalised, and after the clear supernatant was decanted the residue was inoculated peritoneally into a guinea-pig. A similar practice was adopted with eight books in circulation among the patients of two sanatoriums. (These latter books were generally clean in appearance.)

As the result of this experiment two guinea-pigs early died from septicæmia, but not one of the remaining 14 guinea-pigs developed tuberculosis. These experiments confirm the results obtained by certain other workers; but they are in conflict with those obtained from some of the soiled books of the Berlin Municipal Library similarly tested a few years ago.

Next an endeavour was made to measure the risk when a consumptive patient wets the thumb and turns over the pages of a book. In the first place, instead of getting the phthisical patient himself to carry out the first stage of the experiment, we obtained some thin tuberculous sputum (rich in tubercle bacilli), mixed this with much saliva, and lightly applied this mixture to the surface of clean paper with the thumb. After two days the washings were filtered and inoculated peritoneally into guinea-pigs, with the following results: Of five guinea-pigs inoculated four became infected with tuberculosis; and a fifth guinea-pig inoculated from the washings of a piece of paper thus infected four weeks previously, and meanwhile kept folded with its infected surface inwards, also developed tuberculosis. It is certain that the infection tested in this experiment was far grosser than that which could actually occur from any patient, whatever the stage of the disease, who had moistened his thumb from his lips in order to turn over pages; but the results of these experiments suggested the desirability of an extension in the direction of ascertaining whether such *naturally* infected surfaces of paper would retain infection after the lapse of one month. Therefore 12 small sheets of paper were given to 12 patients suffering from advanced tuberculosis with many tubercle bacilli in sputa, and in each case after moistening from the mouth the thumb was smeared across the sheet. This smearing was repeated 12 times. Six of these sheets were washed after two days and the washings (4 c.c.) inoculated into the left thigh of six guinea-pigs. The other six sheets were folded with their contaminated surfaces inwards, and kept under a large bell jar for a month. After a month these papers were washed and six more guinea-pigs were inoculated with the washings.

The results of this experiment were as follows: Of the six guinea-pigs early inoculated one died after a week from acute septicæmia; and at the end of six weeks post-mortem examinations showed four to be infected with tuberculosis and one quite healthy. When the six guinea-pigs inoculated one month later were also killed six weeks after their inoculation, only one showed signs of tuberculosis, and this was limited to a single enlarged and caseated inguinal gland on the side of the inoculation.

In the next experiment, three pages of a book were smeared with tuberculous sputum teeming with tubercle bacilli, the book was closed and the material was allowed to dry for 24 hours. One of the pages was used as a control and the washings were inoculated peritoneally into a guinea-pig. After the water in the jacket of the hot-water oven had commenced to boil (when the temperature of the oven was found to be 95° C.) the other two infected pages and a shallow basin of water were placed in the oven for 30 minutes. The control guinea-pig became infected, but the washings from the two pages removed from the water-oven proved incapable of infecting guinea-pigs. Therefore it seems that the lighter infection of library books may certainly be destroyed by the suitable application of moist hot air.

To test the value of hot water in practical disinfection further, one surface of a handkerchief was smeared thickly with tuberculous sputum teeming with tubercle bacilli, and this was allowed to dry at the laboratory temperature. The handkerchief was then cut into eight small squares, and four of these squares were reserved for control purposes. In one experiment four such squares were immersed for 15 minutes in water after it had been raised to the boiling-point and the source of heat removed. After 15 minutes the pieces of handkerchief so treated were removed, covered, and dried at the laboratory temperature; they were then washed in sterile distilled water, the washings filtered, and the filtrate inoculated peritoneally into guinea-pigs. The results of this experiment were that all the control pieces led to the infection of the guinea-pigs inoculated, while not one of the other pieces exposed to hot water for 15 minutes gave rise to infection.

The following conclusions appear to be warranted.

1. There is probably no material risk involved in the re-issue of books recently read by consumptives, unless the books are obviously soiled. Even then the risks are very slight.

2. Nevertheless, it is desirable to provide against a possible risk, however slight. This will be secured if dirty books recently received from houses in which there is a consumptive reader are not re-issued until such books have been either disinfected or placed "in quarantine" in a separate room for the period of a month. It will be desirable to disinfect such a room from time to time. When such books are very dirty they should be withdrawn from circulation. The loss involved would be much reduced in time if the borrower could be temporarily deprived of his right to borrow when a book is brought back in a badly soiled condition.

3. It would be well to demand (upon a printed and gummed slip) the following precautions of all readers: (*a*) Not to cough into a book; always to cough into a handkerchief. (*b*) Not to moisten the fingers when reading; the hands should always be dry and clean. (*c*) Always to keep the book closed when it is not being read.

4. Moist heat is a simple means of destroying the infection of tuberculosis on those library books which are not likely to be injured by such a method. For this purpose it is not necessary that the temperature should reach 100° C., although it should approximate to that; nor that the exposure should exceed 30 minutes.

It is proposed to extend these experiments with the object of learning if hot moist air can be efficiently employed for disinfecting purposes without causing injury to well-bound books.

A NOTE ON A CASE OF PRIMARY HEPATIC CARCINOMA OF THE "CIRRHOSIS CARCINOMATOSA" TYPE.

BY F. PARKES WEBER, M.D. CANTAB., F.R.C.P. LOND.

THE patient, a male, aged 63 years, was admitted to hospital on Sept. 10th, 1914, suffering from jaundice and ascites. He was a corpulent, coarsely built man, who in his occupation of restaurant keeper had been accustomed to indulge freely in alcoholic drinks. The history was that he became jaundiced for the first time six weeks before admission. During the last fortnight he had been troubled with loss of appetite and inclination to vomit. Before the present illness he was not supposed to have had anything serious the matter with him.

In the hospital.—The patient was much jaundiced, but his fæces were not "acholic." Evidently bile was passing into the intestine. On admission the hepatic dullness extended slightly below the costal margin and there was some ascites. The heart

seemed not to be enlarged and the cardiac sounds were clear. There was no abnormal thoracic dullness. Bronchitic sounds were heard over both lungs. Pulse 80, fairly strong. The urine, rather diminished in quantity, contained a trace of albumin. Paracentesis abdominis, on Sept. 11th, yielded 2600 c.c. of clear ascitic fluid, of specific gravity 1012, containing bile-pigment and 9 per mille albumin (as estimated by Esbach's tube). The bowels acted freely with Carlsbad salts. With the fæces there was sometimes a little fresh hæmorrhoidal blood. In spite of therapeutic measures the patient's general condition became steadily worse. The jaundice deepened, the debility increased, and the patient gradually passed into a condition of somnolence and then of coma, apparently "cholæmic coma." Death occurred on Sept. 17th, seven days after his admission. In the hospital there had never been any fever; the temperature had varied between 96·8° and 98·6° F., the pulse between 76 and 104, and the respiration between 20 and (at the end) 32 per minute.

Necropsy.—At the post-mortem examination the liver, deeply bile-stained, was enlarged, weighing 74 oz., and had an irregular surface; on section it was found to be full of nodules, mostly of pultaceous consistence, varying in size from that of a pea or smaller to that of a chestnut or larger. Apart from the liver, nothing of special interest was found, excepting some fatty tissue behind the liver, which by microscopic examination was seen to be (secondarily) infiltrated with the malignant disease. No other malignant disease was discovered in the body. The spleen was slightly enlarged.

Microscopic examination of the liver (for help in which I am much indebted to the kindness of Mr. S. G. Shattock) showed that the organ was extremely cirrhosed, consisting of a coarse connective-tissue framework, enclosing nodules or "islands" of hepatic tissue and new growth. In the islands of apparently original liver-tissue the hepatic cells seemed rather degenerated, and there was a good deal of bile (doubtless inspissated bile), coloured green in the stained sections. The nodules of new growth might, roughly speaking, be divided into two classes—the first adenomatous, the second carcinomatous. In the adenomatous nodules the cells appeared fresher than in the apparently original liver-tissue, and took on the hæmatoxylin stain better, and no deposits of inspissated bile-pigment were observed. In the carcinomatous nodules the structure was more that of a rapidly-growing polygonal-celled cancer, tending to undergo necrotic changes. But it was not always easy to distinguish between the adenomatous nodules and the regular carcinomatous nodules; there seemed to be intermediate forms by which the two classes merged into each other. On the whole, those nodules in which the cells and their grouping more nearly resembled the structure of true hepatic parenchyma were to be regarded as adenomata, whereas those in which the structure approached that of a rapidly growing polygonal-celled carcinoma were doubtless *really* carcinomatous. In the sections of some of the nodules part of the area seemed to be occupied by original hepatic parenchyma, whilst the cells of another portion stained better and appeared to be growing in an exuberant fashion. This suggested an attempt at the adenoma-like overgrowth, which may occur in a glandular organ such as the liver, and which doubtless represents a spontaneous though very imperfect effort on the part of the organism to "compensate" for the loss of tissue due to the degeneration and fibrotic change in the gland in question. The lumen of some of the smaller blood-vessels seemed to be occluded by carcinoma growing within the vessels; such a blocking of the blood-vessels best explains the marked tendency of the carcinomatous nodules in cases of "cirrhosis carcinomatosa" to undergo rapid necrotic softening.

In the present case there can be no doubt that the condition is one of "cirrhosis carcinomatosa" (a term employed by H. D. Rolleston) or primary cancer arising from the hepatic glandular cells in a cirrhosed liver. Had the patient lived somewhat longer (instead of dying unusually early in the disease from cholæmia) the masses of softened carcinoma in the liver would doubtless have been larger and thus more characteristic. In THE LANCET of April 16th, 1910 (p. 1066), I described a case of primary carcinoma in a cirrhotic liver which, in one respect, was even more typical than the present one, because in some of the non-necrosed nodules of new growth, in which there was a definite ("trabecular") arrangement of the cells in tubules, some of the tubules enclosed a bile-like substance, if not actually true bile. But the present case is especially interesting as illustrating *the origin of the carcinoma on the basis of adenoma-like regenerative changes in the liver-cells in hepatic cirrhosis.* Amongst the many examples of primary hepatic-cell carcinoma which have been published in the medical literature of recent years one of the most remarkable is a case recorded by P. Prym in the tenth volume (Wiesbaden, 1912, p. 170) of the *Frankfurter Zeitschrift für Pathologie.* That author there described a metastatic tumour in the patient's skull, in which he observed fatty infiltration of, and secretion of a bile-like substance by, the tumour-cells, the tumour-cells being, of course, derived from secretory glandular cells of the liver, part of whose normal function is to secrete bile and to store up fat.

Harley-street, W.

TREATMENT OF SEPTIC COMPOUND FRACTURES AND WOUNDS BY IONISATION OF SALICYLATE OF SODIUM.

BY ROBERT McQUEEN, M.R.C.S., L.R.C.P. LOND.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS;
AND
LESLIE H. BOOTHBY.

DUE to several reasons the wounds in this war, especially those produced by shrapnel, are of a terribly septic nature, so much so that one often despairs of any treatment except early amputation.

Having exceptional opportunities to follow the results of our treatments on cases of this kind, after 48 hours of receiving the injuries, we venture to publish the results based on 50 wounds of the worst nature, in nearly all of which the wounds were very extensive, suppurating profusely and complicated by compound comminuted fractures. Appreciating the bactericidal properties of salicylic acid, we at first tried the effect of freely dusting the wounds with a powder diluted in varying strengths by boric acid, but we considered we did not obtain any more satisfactory results than what we should have found by other antiseptic and aseptic methods; the same applies to a powder containing sodium salicylate. We then tried the effect of ionisation with salicylic acid with but little, if any, result. Finally, we tried the effect of

ionisation with the sodium salt and found that within three to four days, with one application a day, the suppuration had most appreciably diminished and the tissues around the wounds looked healthy; also the patients were practically free from pain.

In order to ascertain if this rapid diminution of pus was due to the action of the ionisation of the sodium salicylate or the salt alone, we frequently dressed the wounds, which had practically cleaned up, with a solution of the salt only, omitting the ionisation, and in every case we found that the suppuration recurred, and in the course of two or three days the wounds were as septic as they would have been with ordinary methods, but immediately cleared up again when we employed ionisation with the sodium salt. We experimented also with ionisation of various other solutions, even sterilised water, but in no case did we obtain any result beyond what one would expect with aseptic measures and sterilised solutions.

The method we employ is to first clean up and syringe the wounds with sterilised water, or preferably with a 4 per cent. solution of sodium salicylate, and if it is necessary to swab the wounds use sterilised swabs dipped into the solution; after the wound is thoroughly cleaned to plug firmly and even tightly with sterilised gauze, or ribbon gauze for the small cavities and pockets, soaked in a *warm* 8 per cent. solution of sodium salicylate, then laying over all a gauze pad soaked in the same, again over this is placed a piece of lint, folded four times, saturated with the solution, which is pinned to a copper mail chain electrode attached to the positive pole of a galvanic battery, and a current from 5 to 30 milliampères is passed for at least a quarter of an hour. The chain electrode and pad are removed and a dry piece of gauze is put over the wet dressings with some wool and kept in position by a few turns of a bandage.

It is essential to remember the following points in carrying out this treatment: first, no other antiseptic reagent to be used in the cleaning of the wounds not even a solution of boric acid, except perhaps peroxide of hydrogen, and even then we strongly recommend that the wound should be washed out with sterilised water before using the solution of sodium salicylate; secondly, all cavities leading off from the main wound and spaces between broken and splintered bone must be packed with the gauze, and if separate pieces of gauze are used they must all be in contact with the main plug; thirdly, the gauze must be plain, sterilised gauze and must not be prepared with any antiseptic, such as mercuric cyanide or sal alembroth; fourthly, the current should be gradually increased and diminished, and not turned on and off suddenly; and fifthly, the solution of sodium salicylate should be warm. We found we obtained better and more rapid results with a warm solution than when we used it cold.

The relief from pain after ionisation was very marked; in fact, by the fourth day the patients were practically free from pain. It was especially noticeable with those who had severe bone injuries. We thought that this might probably be due to the galvanism, but it was undoubtedly due to the ionisation with the salicylate of sodium. Another curious feature of this treatment is its effect on granulation tissue, usually starting to appear about the third or fourth day, causing it to grow most rapidly, big cavities filling up in an extraordinarily short time.

THE RELATIONSHIP BETWEEN

NUCLEAR DIVISION AND PHAGOCYTIC POWER IN POLYMORPHONUCLEAR LEUCOCYTES.

BY FRANK E. TAYLOR, M.D.LOND., F.R.C.S.ENG., M.R.C.P.LOND., D.P.H. CAMB.,

LECTURER ON BACTERIOLOGY, UNIVERSITY OF LONDON, KING'S COLLEGE.

A GREAT advance was made in the study of the morphology and functions of the leucocytes present both in normal blood and in the blood in various pathological conditions when Ehrlich applied to this subject special methods of fixation and staining, the most important being the introduction of his triacid stain. A more intensive study of this subject has resulted from the Romanowsky stain, various modifications of which—e.g., Jenner, Giemsa, and Leishman—are in constant use at the present day clinically in the examination of the blood for the differential diagnosis of diseased conditions.

Of the various types of leucocytes found by these methods to exist in normal blood the polymorphonuclear neutrophilous leucocyte is most abundantly present, constituting about 65 to 75 per cent. of the total number of leucocytes, whilst a still larger proportion is often found in the inflammatory leucocytoses. It is also the most actively phagocytic of the leucocytes, as was demonstrated by Metchnikoff, by whom it was termed "microcyte" and considered to be the producer of microcytase, a ferment which brought about the digestion of phagocytosed bacteria.

One of the most striking histological characteristics of this variety of leucocyte is the appearance of the nucleus, which is always single, but which on account of the many shapes it may assume gives the distinguishing name "polymorphonuclear," or as it is commonly abbreviated "polynuclear" or "polymorph," to the cell. The nucleus may be uni-, bi-, tri-, quadri-, or multipartite. Arneth in 1904 showed that cells with these various numbers of nuclear divisions are present in normal blood in fairly constant proportions and made this the basis of his method of classification. He divided the polymorphs into five classes: Class I., with unipartite or undivided nucleus; Class II., with bipartite nucleus, consisting of two parts; Class III., with tripartite nucleus, consisting of three parts; Class IV., with quadripartite nucleus, consisting of four parts; and Class V., with multipartite nucleus, consisting of five or more parts. Great elaboration resulted from a further subclassification according to whether the nuclear divisions were round, oval, or loops, and according to the varying proportions of each of these shapes present. It would appear that this elaborate subdivision is unnecessarily complex, especially as no definition of what constituted these various figures was given, and a sufficiently accurate and comprehensive neutrophile blood picture is obtained by the use of the above-mentioned five groups. In normal conditions this neutrophile blood picture is remarkably constant, showing very little variation from the number given by Arneth. (Table I.)

In pathological conditions, and especially in the infective diseases, these numbers may show any degree of derangement from the smallest to the

most profound, so that even whole groups may be missing.

TABLE I.—*Showing the Percentage of Leucocytes arranged according to Number of Nuclear Divisions in Normal Blood.*

—	Class I.	Class II.	Class III	Class IV.	Class V.
Normal	5	35	41	17	2 per cent.

The most characteristic pathological neutrophile blood picture is seen in the various toxæmic conditions, such as are present in the infective diseases. Thus in advanced pulmonary tuberculosis with secondary infection I have found such counts as those shown in Table II.

TABLE II.—*Showing an Increase in the Percentage of Polymorphs with One or Two Nuclear Divisions and Decrease of those with more Divisions.*

Cases.	Class I	Class II.	Class III	Class IV.	Class V.
Advanced phthisis...	18	64	17	1	0
,, ,,	10	53	25	12	0
,, ,,	18	46	22	10	4

It will be observed that in the above infections there is a marked increase in the percentage of polymorphs with uni- and bipartite nuclei and a corresponding decrease in the percentage of those with tri-, quadri-, and multipartite nuclei. This neutrophile blood picture is spoken of as showing a "dislocation to the left" or a "deviation to the left"; and this dislocation to the left has been also observed, among other conditions, in pneumonia pleurisy, typhoid, scarlet, and puerperal fevers, and in measles, diphtheria, and oral sepsis.

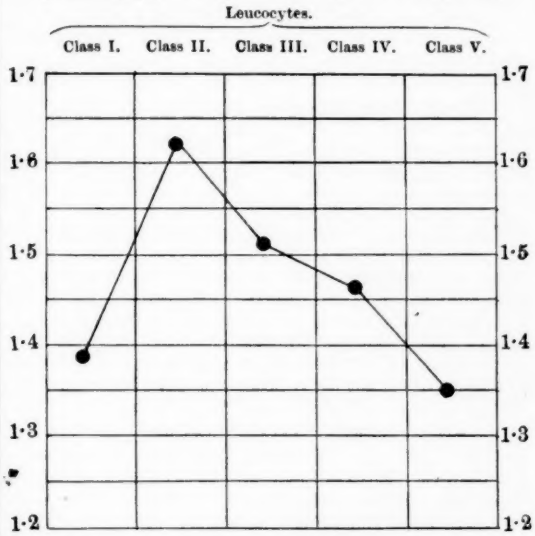
This behaviour of the leucocytes is explained by Arneth in accordance with his views on the development and life cycle of these cells. The neutrophile leucocytes are developed from the myelocytes of the bone-marrow, and at first possess an undivided nucleus. Later the nucleus divides and the nuclear division becomes greater with increasing age, so that the cells of Class V. are the oldest, being older than those of Class IV., which are older than those of Class III., and so on. Now, toxæmias bring about destruction of neutrophile leucocytes, the disintegration affecting the older leucocytes, so that the forms possessing the most divided nucleus disappear first from the blood. Hence the neutrophile blood picture may be taken as an index of the severity of the intoxication. If this explanation of Arneth be correct it may be assumed that the general functional activity of the neutrophile leucocyte will vary with the age, and therefore with the amount of nuclear division present in these cells. In a series of 42 opsonic index determinations for the staphylococcus pyogenes aureus, in which 4183 leucocytes and 6340 organisms were enumerated, I have taken the phagocytic activity of the leucocytes as an index of their functional activity. (Table III.)

TABLE III.—*Number of Leucocytes and Ingested Organisms in 42 Opsonic Index Determinations.*

Nuclear divisions of leucocytes.	Class I.	Class II.	Class III.	Class IV.	Class V.
Organisms	569	2744	2321	625	81
Leucocytes	409	1758	1531	425	60
Average organisms per cell	1·39	1·62	1·51	1·47	1·35

These results are shown graphically in the accompanying chart.

Chart showing the Average Number of Staphylococci Ingested by Leucocytes according to Number of Nuclear Segments.



The decimal figures given on each side of the chart indicate the number of organisms ingested per cell.

The chart clearly shows that the neutrophile leucocyte of Class I. with undivided nucleus possesses a moderate power of phagocytosis; that this power of phagocytosis reaches a maximum in the leucocyte of Class II. with bipartite nucleus and then progressively diminishes as the nuclear division increases, being lowest in the cells of Class V. with multipartite nuclei. It would therefore appear that by taking phagocytic power as an indication of functional activity, and this again as an indication of the age of the cell, the neutrophile leucocytes with undivided nuclei are young and immature, those with bipartite nuclei have reached adult life and possess full functional power, and that thereafter progressively increasing nuclear division indicates increasing age and diminished functional activities. These results may also be taken as in some measure supporting the views put forth by Arneth on the relationship between the age and functional power of the neutrophile leucocytes and their behaviour in the various toxæmic states.

Chandos-street, W.C.

PRESENTATION TO SIR GEORGE HARE PHILIPSON.—On July 1st, at the Royal Infirmary, Newcastle, Sir George Hare Philipson was presented with a silver rose-bowl and candelabra, in recognition of 50 years of service on the honorary staff and on the house committee of the institution, of which he is chairman. The presentation was made on behalf of the commi tee of management by Alderman W. J. Sanderson, who explained that the gift was intended not only to mark the great services of Sir George Hare Philipson to the infirmary, but also as a token of the esteem and affection in which he was held by every member of the governing body. Both lay and medical colleagues of the recipient congratulated him in eulogistic and felicitous terms, while the Durham and the Northumberland Miners' Associations and the Newcastle Corporation joined in congratulatory addresses through their representatives.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

ON TRANSIENT RENAL CONGESTION.

BY F. H. EDGEWORTH, M.A., M.D. CANTAB., D.SC. LOND.,

MAJOR, R.A.M.C (T.F.); PHYSICIAN TO THE BRISTOL ROYAL INFIRMARY; PROFESSOR OF MEDICINE, UNIVERSITY OF BRISTOL.

THE following four cases suggest the theory that a temporary congestion of the kidneys may take place as a result of violent muscular exertion, or of exposure to cold, or of both these causes.

CASE 1.—An otherwise healthy man, aged 23 years, came under my observation in August, 1897, suffering from hæmaturia. He said that he had had nine similar attacks in the previous five years. After some definite exposure to external cold, or to cold and rain, he felt depressed and sleepy with, shortly, a coated tongue and a temperature of about 100° F. Within 12 hours, often before, the urine became blood-red and lessened in quantity—to less than half the usual amount. The hæmaturia lasted less than a day and then quickly disappeared, and the quantity of urine passed became normal in two or three days. The attack in which I saw him was, he said, a typical one. The urine for the first 12 hours looked like that of an acute nephritis, red and smoky, containing free red corpuscles and blood tube-casts, but no epithelial casts or any crystals. The amount in the first 24 hours was 20 oz. Next day the blood had disappeared, but albumin was present, and on microscopical examination the urine was found to contain many hyaline tube-casts. The amount passed had increased to 35 oz. By the fourth day the urine was normal in quantity and contained neither albumin nor tube-casts. The temperature was 100 2° when I first saw him, but this slight fever had disappeared the next day. There was no ocular or cardiovascular evidence of any underlying chronic renal disease. A second exactly similar attack occurred in September—one, like the others, immediately following on exposure to external cold. I therefore sent him to the south coast for the winter. He has remained well ever since.

CASE 2.—A previously healthy man, aged 21 years, went for a three-mile run one very cold evening in November, 1901, clad only in a thin vest and running shorts. Three hours subsequently he passed blood in the urine, became frightened, and sent for me. The temperature was normal, no abnormal physical signs were present, the urine was smoky and red, and contained blood cells and blood tube-casts. On the following day the urine contained a good deal of albumin and epithelial tube-casts, but no blood cells or blood tube-casts. By the fourth day the albumin and casts had disappeared, and the quantity of urine, which was only 22 oz. on the second day of the attack, had increased to between 40 and 50 oz. The patient was recommended to avoid such exposure in future, and no subsequent attack has occurred.

CASE 3.—A man, aged 26 years, came under my observation at the infirmary in January, 1902, suffering from hæmaturia. He said he had had a similar attack two years previously. After being in the house for three weeks with a cough he went to work at 6 o'clock on a very cold morning; he felt chilly on arrival, and at 9 A.M. passed urine containing blood. This continued until 3 P.M. The amount of urine passed was much less than usual. I saw him the next day. He brought a specimen of urine of the previous day; it was blood-red, smoky, albuminous, and contained red blood cells and blood tube-casts. The urine of the day of his visit contained only a trace of albumin, with no blood and no casts. A week subsequently no albumin was present. There was no physical sign of chronic renal or other disease.

CASE 4.—A man, aged 38 years, on the evening of June 5th, 1914, after a hard game of tennis, noticed that his urine was reddish in colour and not clear. The following morning it was again of a clear yellow colour. That afternoon he again played tennis, and in the evening the urine was again reddish and smoky. I found on examination that it contained free blood cells and blood casts and no crystals. The quantity of urine passed was diminished, though no measurements were made. On the morning of the 7th the urine was of a clear yellow colour, specific gravity 1023, gave a faint cloud with trichloracetic acid, and contained a few hyaline casts. On the 8th the urine was normal. No ocular or cardiovascular signs of chronic renal disease were found, nor have any developed in the year that has elapsed. The patient was recommended to leave off strenuous games for the rest of the summer. He remains well.

These cases have the following features in common. The patient, after exposure to cold, or after strenuous exercise, or after both these events, passed urine in quantity less than normal containing free red blood corpuscles and blood casts. These two related phenomena lasted from six to 12 hours, then disappeared, and were succeeded by a temporary albuminuria with hyaline (and in one case epithelial) tube-casts, lasting from two to three days. No physical signs suggesting the existence of either acute or chronic renal disease were present at the time of the attack, nor have they developed subsequently. The cases were in all probability not cases of acute Bright's disease; the affection was far too transitory for this diagnosis to hold good. The quite definite history in each case of the events immediately preceding the attack suggests that they were due to a temporary renal congestion. The difference between these cases and those of acute Bright's disease may perhaps be explained by the supposition that no invasion by micro-organisms or damage by their products took place concurrently with the congestion.

Cases such as the above may easily be distinguished from those of acute renal bleeding due to stone, oxaluria, tubercle, malignant growth, hæmophilia, associated with purpura or erythema, occurring in the course of chronic Bright's disease, "essential" hæmaturia, and the family disease described by Herringham, by the quite different features of the attack. But they are, I think, at first quite indistinguishable from a commencing acute nephritis, unless the attack be a recurrent one. It is the speedy disappearance of the blood and blood casts, and, within a day or two, of the albumin which enables a diagnosis to be made. They are instances of an affection which, as far as I know, has hitherto not been recognised—one which is apt to be recurrent unless careful directions be given as to clothing and habits.

Clifton.

PENETRATING INJURY TO THE EYE FROM BROKEN SPECTACLE GLASS.

BY SYDNEY STEPHENSON, M.B. EDIN., F.R.C.S. EDIN., D.O. OXON.

INJURIES to the eye by broken spectacle lenses are admittedly rare. Hans Lauber,[1] among 150,000 ophthalmic patients, found 5 (or 1 in 30,000) who had sustained this kind of accident. Such accidents, as a rule, are of a description to which people are exposed but exceptionally. For example, in the five cases related by Lauber the injury resulted from a railway collision, the explosion of an acetylene lamp, a knock against a metal

[1] The Ophthalmoscope, April, 1914.

wardrobe-number, a blow from a ball, and an injury from an animal's hoof. It has even been suggested that glasses may sometimes protect the eyes from injury either by diminishing the force of a blow or by changing its original direction. A case is known, indeed, where a chip of metal, weighing 6020 milligrammes, had shattered the glasses but left the eye beneath intact (Hirschberg). Lauber believes that spectacles are, speaking generally, more dangerous than eyeglasses, inasmuch as the latter drop off more readily than the former. The question as between framed and rimless spectacles or eye-glasses is more difficult to decide, since those most exposed to injuries seldom wear the rimless forms. Of the ten cases of injury to the eye by broken lenses, one was in a child, one in an old man, and the remainder in young men. The case in my practice, now related, is the only one where the accident occurred to a woman. The facts are as follows:—

A woman, aged 34 years, had for several months worn spectacles for the relief of headache. They were gold-filled rimmed spectacles, containing a weak sphero-cylindrical combination. They were used for all purposes. At about 8 o'clock on the evening of Feb. 6th, 1915, the patient stooped to pick up a child's nightgown from the floor of the passage of her house, and in doing so struck the right lens of her spectacles upon the newel of the staircase. The glass was broken by the impact, and the patient noticed that water and blood came from the eye, which she felt was wounded. When I saw her some two and half hours after the accident, I found slight excoriation of the skin of the outer half of the right upper lid and of the parts about the outer canthus. She complained of but slight pain. The wounded eye watered freely. Vision 3/36; tension −3. A prolapse of the iris, about the size of a very small pin's head, was present about midway between the centre of the cornea and its outer edge, slightly below the transverse meridian of the eye. The pupil was moderately dilated (cocaine had been used before I saw the patient) and slightly oval, its long axis being directed downwards and outwards. Some little haziness in the lower and outer part of the pupil indicated that the lens capsule had been wounded. The anterior chamber could scarcely be said to exist. There was a good reflex from the fundus of the eye. That a fragment of the broken spectacle lens had actually penetrated the eyeball was, of course, obvious from (1) the extremely shallow anterior chamber; (2) the low (− 3) intra-ocular pressure; (3) the prolapse of the iris; and (4) the wound of the capsule of the lens. As regards the uninjured eye, vision was 6/9. The wounded eye was cleansed and covered with a pad and bandage, and the patient was put to bed. Atropine sulphate (1 per cent.) and argyrol (15 per cent.) were prescribed for use three times a day.

The progress of the patient towards recovery was as follows:—Feb. 9th: No pain. The parts do not appear to be septic. There is but little redness of the eye. Tension normal. Anterior chamber reformed. Pupil well dilated. Tiny adhesion of iris to wound in cornea. March 2nd: Eye waters and is rather irritable, but there is scarcely any redness. Tension + 1. Vision 2/60. Former wound of cornea now marked by a small nebula, to the hinder surface of which there is a small entanglement of the iris in the neighbourhood of the pupil. Lens immediately behind the nebula is locally opaque. April 27th: Vision 2/24. Tension slightly raised. No redness or irritability of the eye. Small anterior synechia in the lower outer quadrant of the cornea. Streaks of feathery opacity radiate from wound into the substance of the lens. A view of the disc and retinal vessels can be got with the ophthalmoscope. June 8th: Eye quiet. Vision 3/36 and No. 20 Jaeger (words). Tension normal.

Welbeck-street, W.

Reviews and Notices of Books.

The Early Diagnosis of Heart Failure and other Essays on the Heart and Circulation.

By T. STACEY WILSON, M.D. Edin., F.R.C.P. Lond., B.Sc. Edin., Senior Physician, General Hospital, Birmingham. London: Smith, Elder, and Co. 1915. Pp. 596. Price 12*s.* 6*d.*

THIS volume consists of a number of separate essays dealing mainly with the subject of heart failure. The author explains that as the essays have been written at various times during the last 20 years, and deal with subjects closely related to each other, it is inevitable that there should be a certain amount of repetition. He has, however, been wise in deciding to make no attempt to remedy this, but has left each essay individually complete. The book has the merit of containing the result of much original observation and study, and although probably many physicians would not agree with several of the deductions, nevertheless a study of the methods and remarks will prove interesting and suggestive. The volume traverses ground that is more or less new, and Dr. Wilson claims to recognise various types of cardiac failure which have not been hitherto described in the ordinary text-books dealing with cardiac disease

In advancing his new theories Dr. Wilson records a large number of cases to prove his various contentions. While we cannot say that we are fully convinced by his arguments, the evidence he adduces is such as to encourage other physicians to follow along the same lines, because if Dr. Wilson's contentions are corroborated several new indications of early heart failure will be established. We make no attempt here to discuss all the methods which he employs or the conclusions which he draws from them, but two conditions may be mentioned as illustrations of Dr. Wilson's teaching. He lays stress upon the signification of "high diaphragm" and "diminution in the area of liver dullness," recognising in them signs of diminution of the total volume of blood in circulation, and thus suggesting probable myocardial weakness. Dr. Wilson, for instance, maintains that when from any cause the total volume of the blood in circulation is materially lessened, the total bulk of the intrathoracic viscera is correspondingly diminished by the relative emptiness of the thoracic blood-vessels, especially those of the lungs. This diminution in the bulk of the intrathoracic contents, he says, shows itself by an elevation of the diaphragm, which has to be maintained at a higher average level than the normal in order to adjust the cubic content of the thorax to the altered volume of its contained viscera. Certain conditions are mentioned in which raising of the diaphragm is generally recognised, such as gastric ulcer, but we cannot agree with the conclusion here that a high diaphragm may be a sign of heart weakness. The argument is that a decided weakening of the heart as a whole might reasonably be expected to diminish the volume of blood circulating through the lungs, and that therefore the diaphragm would rise; but we consider that the clinical evidence adduced is not sufficient to prove the point. Similarly Dr. Wilson suggests that a diminution in the area of the liver dullness is an important sign of myocardial weakness or of deficiency in the total volume of the blood. His remarks on the subject

are worthy of note, and the clinical cases he records in support of his theory also deserve consideration.

The fields for clinical research which are suggested in this work are certainly worth developing, and it would be of value to ascertain whether other physicians can corroborate or otherwise Dr. Wilson's observations.

Diabetes Mellitus: Designed for the Use of Practitioners of Medicine.

By NELLIS B. FOSTER, M.D., Assistant Professor of Medicine, Cornell University. London and Philadelphia: J. B. Lippincott Company. 1915. Pp. 243.

IN this carefully written and well documented essay Dr. Foster gives an account of diabetes mellitus that should be of real service to those for whom it has been written. It is divided into 14 chapters dealing with different aspects of the disease and with allied subjects such as acidosis, normal metabolism, and the identification of sugars in the urine. Dr. Foster imparts his information briefly, and wisely does not aim at the production of anything like a complete survey of the very extensive literature that has grown up round the subject of diabetes. There are many contrary winds of doctrine as to the etiology, pathology, and therapeutics of the disease favoured by different pathologists and clinicians. Dr. Foster trims his sails to none of the more violent of these, and gives his reader a very fair outline of the different views he may choose from or adopt.

The longest chapter is that on the treatment of diabetes, and extends to 45 pages; it is almost entirely dietetic in substance, and contains a large amount of practical advice about the feeding of diabetic patients. Numerous references to the literature are given throughout the book, so that the reader has the opportunity to study special points of interest with greater completeness by referring to the original authorities. A few slips in the text may be pointed out: the name "Fugoni" (p. 51) should be "Frugoni"; "albumen," meaning white of egg, is used throughout when "albumin" appears to be required; in his account of acidosis the author seems to have overlooked the important work of Lewis; "Frerich's" (p. 144) should be "Frerichs'"; on p. 55 reference might well be made to the account of diabetes with which von Noorden opened the discussion on that disease at the International Congress of Medicine held in London in 1913. Finally, it may be pointed out that the title of Dr. Foster's book affords a striking example of amphibology. These, however, are but trifling defects in this brief and excellent text-book of diabetes mellitus; it may be warmly recommended to all medical students and practitioners of medicine.

Text-book of General Therapeutics for Veterinarians.

By E. FRÖHNER, Professor of Pathology and Therapeutics, in the Veterinary College at Berlin. Translated by LOUIS A. KLEIN, Professor of Pharmacology and Veterinary Hygiene and Dean of the Faculty, University of Pennsylvania. London and Philadelphia: J. B. Lippincott Company. 1914. Pp. 301. Price 12*s.* 6*d.* net.

THIS readable and interesting book on veterinary therapeutics enjoys obvious popularity, since this translation is made from the fourth edition of the original work. The matter is so well arranged and so plainly and concisely dealt with that no student of veterinary therapeutics can fail to gain from taking it as a guide. The author mentions that veterinary medicine has derived very many, if not most, of its therapeutic conceptions from human medicine, and those interested in the comparative aspects of medical science will find not a little information of value to them in the volume.

Vaccination, immunisation, and inoculation, which have developed so greatly in the last decade, are adequately and concisely discussed and explained. The history of therapeutics is compressed into 23 well-written pages, and the well-known pioneers of various countries have their methods and tenets comprehensively reviewed. The general therapeutics of the various organs is described in relation to pathology, physiology, dietetic treatment, medicinal remedies, and mechanical and operative treatment. The German regulations governing disinfection have been included in the translation, and are instructive and quite applicable in most cases here. Air, water, massage, and electricity as therapeutical remedies receive adequate notice, and climate, light, and the Roentgen rays have short paragraphs to themselves.

The work is well indexed and the translator has done his part well, while the publishers can be congratulated on the general get-up of the book.

Modern Illuminants and Illuminating Engineering.

By LEON GASTER and J. S. DOW. With 204 illustrations. London: Whittaker and Co. 1915. Pp. 462. Price 12*s.* 6*d.* net.

WE have often expressed our appreciation of the aims and objects of the Illuminating Engineering Society, and of the excellent work it has already done in pointing out the directions in which systems of artificial lighting are wrong, wasteful, and extravagant, and in encouraging the adoption of lighting principles that are not only vastly better from an illuminating point of view, but are also a joy and a help instead of a source of irritation and offence to the eye. The indirect method of illumination which gives delightfully soft and subdued results is effective in bringing details into view. This method, we are glad to see, is being steadily and surely adopted, and much of the pioneer work in this direction has been done by the authors of this interesting volume, who acknowledge that considerable progress has been made since the foundation of the *Illuminating Engineer* in 1908 and the subsequent formation of the society. The book presents as complete a history of the subject of practical illumination in all its branches as it has been our opportunity to read. The subject, as must appear to everyone, has advanced enormously during recent years, but while stronger sources of lighting have been discovered, notably in the Welsbach mantle and in the arc and incandescent systems of electric illumination, the application in many instances has been unscientific and objectionable. There has been a craze for glare, but happily this promises to yield to artistic and more effective illumination, which, above all, in place of being a source of annoyance, is comfortable and restful to the eye. The book is interestingly illustrated, and shows the effects of approved methods of lighting in the domestic room, the workshop, and the street in contrast with bad and clumsy systems. Particulars as to shading, position, globes, &c., are entered into with some detail. The subject has been neglected for an inexcusable time having regard to its importance, not only on economic grounds, but on hygienic grounds also. The question of the relation of impairment of eyesight to faulty methods of

artificial illumination is in urgent need of increased study, and this has been given an excellent start by these authors, with already commendable results. The book is full of interest, and we congratulate Mr. Gaster and Mr. Dow on its production.

LIBRARY TABLE.

Institute of Physiology, University College, London: Collected Papers. Vol. XVIII. Edited by ERNEST H. STARLING, M.D., F.R.C.P., F.R.S., Jodrell Professor of Physiology. 1913–1914.—Of the 25 reprints in this volume of collected papers, which represent a large amount of original work by Professor Starling and his pupils, all except eight have been already epitomised in THE LANCET as they appeared in the *Journal of Physiology*. Most of the remaining eight deal chiefly with chemical questions and were published in the *Biochemical Journal*. Three of these papers deal with estimation of various substances: (1) of urea, and indirectly of allantoin, in urine by means of urease; (2) of allantoin in urine in presence of glucose, by R. H. A. Plimmer and Ruth F. Skelton; and (3) tyrosine in proteins by bromination, by R. H. A. Plimmer and Elizabeth C. Eaves. R. H. A. Plimmer contributes a short paper on the Separation of Cystine and Tyrosine, and Marjory Stephenson one on Some Esters of Palmitic Acid. There are two papers reprinted from the Proceedings of the Royal Society—one from 1913 on Negative After-images and Successive Contrast with Pure Spectral Colours, by A. W. Porter and F. W. Edridge-Green, and one on the Antagonistic Action of Carbon Dioxide and Adrenalin on the Heart (published in 1915) by S. W. Paterson. It was found that carbon dioxide alone depresses all the functions of the isolated heart, and that adrenalin, besides dilating the coronary vessels, has a specific action in increasing the rate and strength of ventricular contraction. The effect of carbon dioxide and adrenalin combined is still to allow of more rapid and stronger contraction and rapid relaxation, and also to lengthen the diastolic period. Thus greater filling of the heart takes place and the heart is in better condition for a maximal output.

Transactions of the American Medico-Psychological Association. Vol. XXI. 1914. Pp. 599.—Among the many papers of neurological and psychiatric interest in this annual volume one or two may be specially noted. Dr. Thomas W. Salmon contributes a paper on General Paralysis as a Public Health Problem, in which he calls urgently for a Wassermann survey of the groups of the civil population which receive public support. And, of course, it is absurd to record cranial measurements of men and boys in prisons and reformatories and not at the same time to ascertain whether or not they have syphilis. It would be useful, also, to examine systematically the relatives of the general paralytics in public institutions. Dr. Salmon considers that the problem of the treatment of syphilis can be solved by placing it wholly in the hands of public health officials. Dr. Charles B. Dunlap, in dealing with the pathology of general paralysis, says that he looks to prophylaxis in syphilis itself as the great hope of the future. Professor Adolf Meyer, in discussing the value of various symptoms and signs in the differential diagnosis of general paralysis, holds that the colloidal gold (goldsol) reaction is of the greatest value, more so than a positive Wassermann reaction. Dr. Charles W. Burr criticises the Freudian theory and its application. Dr. D. K. Henderson describes several cases of Korsakow's psychosis occurring during pregnancy. In these cases the pregnant state must be recognised as an important etiological factor in the production of peripheral neuritis and of Korsakow's syndrome. The neuritis may be either local or diffuse. The mental disorder characteristic of the condition may occur alone. These cases also show the symptom of hyperemesis gravidarum in a striking degree, which suggests a possible line of approach as to the elucidation of the nature of the toxin.

JOURNALS.

The Journal of Physiology. Edited by J. N. LANGLEY, Sc.D., F.R.S. Vol. XLIX., No. 4. Cambridge University Press. Pp. 147–300. Price 10*s.*—On the Reciprocal Innervation in Tonic Reflexes from the Labyrinths and the Neck, by J. S. Breitoff. The tonic condition of the extremities is known to be greatly influenced by the position of the labyrinth in space and by the position of the neck. The phenomena have been studied on cerebrate animals by Magnus and de Klejn. On lifting the head to a certain position, in all the extremities the existing "spontaneous" extensor tone increases—i.e., decerebrate rigidity rises; when the head assumes the opposite position the extensor tone of the extremities becomes weaker and may even become flexor tone. These reflexes were named labyrinth reflexes. From definite positions of the neck with regard to the body, excitations of long duration arise in the muscles, tendons, and articulations of the neck, and act further on the tone of the extremities. When the head is turned to one side, the tone on the side to which the head is turned becomes stronger, and that on the opposite side weaker. These tonic reflexes are caused by the receptors of the neck, and are called neck reflexes. The author confined his work to these two reflexes, and studied them on cats. After deep narcosis and isolation of the recording muscles of the fore or hind leg, decerebration after the method of Sherrington was performed, and investigations were begun at the moment of full development of extensor rigidity—one to two hours after decerebration. From his experiments the author concludes that the internal processes which cause spontaneous extensor and flexor tone continue acting in any position of the head, and thus produce an increase of labyrinth and neck tonic reflexes of the same name, and a reduction of the opposite, according to the position of the head.—Fatty Acid Metabolism in the Liver: IV., The Relation of the Iodine Values of Mesenteric and Kidney Fatty Acid to those of Liver Fatty Acids in Pregnant and Lactating Animals, by R. Coope and V. H. Mottram. These authors find that rabbits show wide variations in the iodine values of the fatty acids from mesenteric fat, while kidney fatty acids show a marked constancy. The liver fatty acid values lie between these limits. About the time of parturition the iodine values of liver fatty acid lie nearer those of the mesenteric fatty acids than in normal control animals, which the authors regard as evidence of an infiltration of the liver with dépôt fatty acid.—On Saline Diuresis, by S. Yagi and M. Kuroda. Recent experiments on this subject have shown that different salts vary in the rate and the manner in which they make their appearance in the urine. The two extreme types are the chlorides and sulphates. Both are found immediately in the urine after their intravenous injection, and each attains its maximum output at the height of the diuresis, but thereafter the chloride generally falls rapidly with the reduced fluid, while the sulphate excretion goes on more slowly. Sodium chloride is unaccompanied by any material change in the oxygen absorption of the kidney, while that induced by sulphate injection shows a marked increase. This has been interpreted as showing that chloride diuresis is largely a matter of mechanical filtration, while that from sulphate implies active work of the secretory cells. The diuresis from salts may be lessened by partially obstructing the ureter or by compressing the renal artery. The authors' experiments were made on rabbits anæsthetised by urethane, and when urea was to be determined by paraldehyde. The salt solution injected into the jugular vein was

a mixture of equal quantities of normal saline, solutions of sodium chloride and of sulphate of sodium, or urea. Arrangements were made for collecting the urine from both ureters and for compressing the renal artery. They find that when the diuresis is limited to one side by compression of the renal artery the reduction of the volume of urine on that side is accompanied by a reduction in the chlorides, which is greater under the sulphates and less under urea than the reduction of the fluid. The urea excretion is less affected and the sulphate still less by the reduced circulation in the kidney. When the general blood pressure is lowered by vagus stimulation the excretion of water, chlorides, sulphates, and urea in the urine shows the same changes as occur on one side when the renal artery is compressed. The changes in the urine arising from diminished circulation in one kidney resemble those observed when the ureter on one side is partially obstructed. They are compatible with the view that the glomerular filtrate is subject to selective absorption in its passage along the ureter.—The Fate of Fatty Acids in the Survival Processes of Muscle, by George Winfield. It is established in surviving muscle that, given the presence of a sufficient amount of oxygen, oxidations take place with the evolution of carbon dioxide and that the oxidations increase when the muscles contract. It is also known that when the oxygen supply is deficient, the lactic acid accumulates in the muscles, and that it disappears again when the oxygen supply is restored and the muscle recovers from fatigue. It has not, however, been determined what part, if any, fats play in the chemical events which proceed during the survival life of an excised muscle. It is also sure that carbohydrates are utilised by intact muscle, and though the exact chemical relations between the carbohydrates and the lactic acid of the muscles are not yet fully clear, there are cogent reasons for believing that the latter arises directly or indirectly from the former. Surviving muscles of the hind limbs of frogs were used by the author in order to determine the total non-volatile fatty acids present in excised muscle as compared with the amounts found after varying periods of anaerobic and aerobic survival, and under conditions of stimulation and rest. It would seem that there is a remarkable stability of the fats under all the conditions studied. The fat contents of the uninjured muscles were investigated during (1) simple rigor under anaerobic conditions; (2) prolonged stimulation under anaerobic conditions; and (3) prolonged stimulation under aerobic conditions followed by restoration of excitability by means of oxygen. There is no evidence of change in the fat content of amphibian muscle during the metabolic changes of the survival period which would be sufficient in amount to account for the development of the lactic acid which is known to be produced.—On the Occurrence of a Plastic Flexor Tone in the Monkey; On the Effect of Artificial Stimulation of the Red Nucleus in the Anthropoid Ape; Note on the Physiology of the Basal Ganglia and Mid-brain of the Anthropoid Ape, especially in Reference to the Act of Laughter; On the Activities of the Central Nervous System of the Unborn Fœtus of the Cat, with a discussion of the question whether progression (walking, &c.) is a "learnt" complex, by T. Graham Brown. The space at our disposal will only allow us to give some results from the last of these papers. In vertebrate progression the question arises. Is it an act learnt during extra uterine development, or is it an expression of the activity of a growing "automatic" mechanism, and is "learnt" as little as the act of breathing is learnt at birth? The author's experiments seem to show that movements which resemble those of progression may occur in the unborn fœtus of the cat—not, of course, those of perfectly efficient walking movements. The mechanisms of certain higher centres which play an important part in progression—e.g., the red nucleus—may also be present at this stage of development. It was found that the limb reflexes are very similar to those of the adult cat. The red nuclei seem to be capable of stimulation and evoke their characteristic movements of the fore limbs. If the fœtus is shelled out into warm saline solution, unmistakable movements of progression may be obtained on producing asphyxia by pressure on the umbilical cord. They may even seem to arise spontaneously. This shows that the mechanism for coördinate progression develops during intra-uterine life, and that the coördination of the mechanism is not conditioned after birth by a process of "learning." Further, that rhythmic activity may be evoked by the general stimulus of asphyxiation before it has been evoked or conditioned by any rhythmic self-generated peripheral stimuli, such as those which play an important part in normal progression, but have been shown not to be its intrinsic factors. These results give another instance of the similarity between the respiratory mechanism and that of progression.—The Action of Serum on the Lipase of Pancreatic Juice, by J. A. Shaw-Mackenzie. Serum markedly accelerates the lipoclastic activity, and can be demonstrated with pancreatic juice and with pancreatic extracts. This is not due to the antitrypsin in the serum protecting the lipase from destruction by trypsin. Serum which has been heated to a temperature that destroys antitrypsin is still capable of accelerating the lipoclastic activity of the juice and pancreatic extracts. The lipoclastic activity of the fresh juice is always low, and it would seem that the enzyme in fresh juice is mainly in an inactive condition (prolipase).—Observations upon the Body Temperature of Europeans Living in the Tropics, by William John Young. The observations on the temperature of the rectum, mouth, and in some cases the urine, were made on six white persons (males) living on the coast of Queensland, in latitude 19° 8′ S.—i.e., in a tropical climate with a high degree of humidity. It was found that the temperature of the mouth of Europeans living in the tropics was often considerably lower than that of the rectum, a difference which is more marked after exercise. The temperature of the mouth is thus not reliable as a measure of the body temperature. During complete rest the rectal temperature did not show any marked variations from the limits of temperature observed in Europe. A considerable rise in the rectal temperature was produced by slight muscular work, and this was usually maintained for some time after the work had ceased. The high rectal temperature observed during the day was due solely to muscular exertion.—The Mechanical Regulation of the Heart Beat in the Tortoise, by S. Kozawa.—The Ferments of the Pancreas: Part V., The Carbohydrate Ferments of the Pancreatic Juice, by John Mellanby and V. J. Wooley. Very elaborate details of their experiments are given by the authors. The summary alone extends to a full page of the journal. Pancreatic juice free from carbon dioxide breaks down starch to dextrin (25 per cent.) and maltose (75 per cent. of the final product). The hydrolysis is facilitated by the presence of neutral salts—e.g., $CaCl_2$,NaCl. Pancreatic juice has no action on maltose. The following hypothesis is put forward. Pancreatic juice contains one carbohydrate ferment only (amylopsin). In a neutral medium or in the presence of neutral salts this ferment breaks down starch into dextrin and maltose only. When acid is added to the juice the ferment associates itself with some of the acid, and the activity of the ferment is determined by the hydrogen ion concentration of the ferment complex. The activity of pancreatic juice, to which hydrochloric acid has been added, suggests that this secretion is capable of hydrolysing the starch of a dietary to dextrose. Pancreatic juice alone, or in the presence of neutral salts, acids, or alkalies, has no action on lactose or cane sugar.—The Simple Character of the Yellow Sensation, by F. W. Edridge-Green. The author sets out to show that there is no evidence supporting the view of the composite character of the yellow sensation when produced by pure yellow spectral light. He gives a great deal of evidence supporting his views.—The Diffusion of Gases through the Lungs of Man, by Marie Krogh. This is a much-vexed question—indeed, it involves two distinct questions. First, is the tension of oxygen in the blood always lower than in the alveolar air, or may it not in certain circumstances become higher as maintained by Haldane and his collaborators? If so there can be no doubt that forces other than diffusion must come into play. If the tension of oxygen in the blood is always lower than that in air, as found by A. and M. Krogh and also by Hartridge, the second question arises, Is diffusion quantitatively sufficient to explain the intakes of oxygen measured under the most adverse conditions, and especially during muscular work at low oxygen pressures? The present paper deals with the second question, and the method employed for the determination of the gas diffusion through the lungs of man during rest and also during muscular work is fully described. The conclusion is reached that diffusion is shown to be sufficient to explain the gas exchange between the alveolar air and the blood in all cases which have been investigated in sufficient detail, both at low oxygen pressure and during the heaviest muscular work.

Medical Societies.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF ANATOMY AND PHYSIOLOGY.

Demonstration of New X Ray Apparatus.—Exhibition of Casts.—Estimation of Degree of Brain Development from Endocranial Casts.—Action of Rennin.—Effects of Racemic Arginin on the Excretion of Creatine and Creatinine.—Some Applications of Electrolytic Reduction.

AT the last meeting of this section Dr. EVELYN JOHN EVATT, the President, was in the chair.

Mr. P. T. CRYMBLE demonstrated the new X Ray Apparatus and showed many beautiful plates; a series of demonstrations on students who had had a bismuth meal at varying periods within the previous 24 hours attracted much interest, and incidentally showed that the rate of progress of the bismuth through the alimentary canal varied with the nature of the food with which it was mixed.

Professor J. SYMINGTON showed a series of casts of the Endocranium Arachnoid and Brain to illustrate the degree to which the convolutions and sulci impress the inner surface of the skull.

The section then separated, one portion adjourning to the Anatomy Theatre, the other to the Physiology Lecture Room.

In the Anatomy Theatre Professor A. F. DIXON presided.

Professor SYMINGTON read some observations on the Estimation of the Degree of Brain Development from Endocranial Casts.

In the Physiology Lecture Room Professor W. H. THOMPSON presided.

Professor T. H. MILROY read a paper on the Action of Rennin. He said: During the action of this ferment on milk there is no change in the reaction of the milk either in the earlier stage or in the separation of the clot. The addition of alkaline oxalate retards or inhibits coagulation not only by its removal of soluble calcium, but also from the fall in the hydrogen ion concentration of the milk which it produces. Calcium chloride aids coagulation partly by raising the hydrogen ion concentration and partly by increasing the soluble calcium content. Milk which has been treated shows lowered coagulability, due to the diminished calcium content. The acid precipitation zone of caseinogen lies on the acid side of the ferment zone, but the latter is probably simply an extension of the former. In the study of antiferment action it is always necessary to bear in mind the possibility of the changes being due to alterations in reaction of the medium.

Professor THOMPSON read a paper on the Effects of Racemic Arginin on the Excretion of Creatine and Creatinine, and said that arginin was used prepared from herring milt and racemised according to the procedure followed in Kossel's laboratory. Four experiments were performed—three with rabbits and one with a dog. In the latter the addition of 2 grm. per day to the food (two days) gave an increase of 2·6 per cent.; subcutaneous injection of the same amount, an increase of 195 per cent. to the total output of creatine-creatinine in the urine. The pre-formed creatinine was not increased, or only to an extent (2 per cent.) which lay within the errors of observation. In the rabbits the increase of urinary creatine was less marked, varying from 0·04 to 0·1 mgrm. per hour during a period of six hours following injection *viâ* the jugular vein. There was, however, in two of these (in which the creatine of muscle was determined) an increase of 0·0341 and 0·0178 grm. per cent. respectively in the fresh muscle. In the latter the increase amounted to 0·0870 grm. per cent. of the dried solids. A control experiment on a rabbit with the same anæsthetic (urethane), but without arginin, gave a decrease in the pre-formed urinary creatinine of 1 mgrm. per hour, a decrease in the total urinary creatinine of 0·6 mgrm. per hour, and a relative increase in the latter of 0·5 mgrm. per hour. The creatine of the muscle was also increased—namely, to the extent of 0·0067 grm. per cent. for the fresh muscle and 0·0710 grm. per cent. as calculated for the dried solids—that is to say, almost as large as the increase observed after the injection of the racemic arginin. The results, so far as they go, point to the formation of creatine from lævo-arginin in the dog, and do not support the theory of a "wash-out" or expulsion of pre-formed creatine from muscle. Further experiments, which are in progress, are, however, required before a final decision on this point can be reached.

Dr. J. A. MILROY read a paper on Some Applications of Electrolytic Reduction. He said a cathode consisting of purified sheet lead was used for the following experiments. Lead was selected because it was a metal on the surface of which the hydrogen was developed at a relatively high tension, and therefore exerted a correspondingly intense reducing action. In this respect zinc and mercury were superior to lead, but were less convenient to use. The reduction was carried out in an electrolytic cell consisting of an inner porous porcelain pot, containing the solution of the substance to be reduced, enclosed by an outer vessel containing dilute sulphuric acid. The cathode was immersed in the solution in the inner vessel and the anode in the dilute acid in the outer vessel. The current was derived from 4–8 accumulators placed in series. The following were some of the results obtained:—1. Oxalic acid was reduced successively to glyoxylic acid and glyoxal. 2. In the hope that this reaction might be applicable to other dibasic acids, the reduction of saccharic acid was tried. Only a small amount of a substance which reduces Fehling was formed, and so far Dr. Milroy had not obtained the glycuronic acid which might have been anticipated as the earliest reduction product. 3. Hæmatin dissolved in 70 per cent. alcohol containing sulphuric acid was transformed first into a pigment resembling hæmatoporphyrin; later the solution became yellow and had the spectroscopic characters of a solution of urobilin. Still later the solution became practically colourless, but on standing exposed to the air it became yellow. This acidation was more rapid in ammoniacal solution, and the resulting pigment had similar characters to those of urobilin, having a similar spectrum and giving a marked green fluorescence on the addition of ammoniacal zinc hydrate. It might, therefore, be concluded that the final product of reduction was a chromogen of a pigment resembling urobilin.

New Inventions.

THE "KIRBY" HOOK-PIN.

THE fastener shown in the illustrations has been designed by Dr. C. E. Reinhardt-Rutland with the object of providing an easy and a safe means of fixing bandages and puttees, and can, indeed, be used to bring together and maintain in proximity the edges or folds of any substances or garments upon which the little hooks can get a grip. (Fig. 1.) For

FIG. 1.

use the hooks of the appliance are inserted in the underside of, say, the end of a bandage, pushed through, turned over, and fastened into the material. Owing to the points being turned in towards the shanks of the "hook-pins" there is no danger of scratching the skin of a patient even when the hooks are used with thin bandages next the skin. The illustration (Fig. 2) shows the fastener in use upon puttees.

The fasteners can be used to hold reefs in the trouser band, so taking the place of belt or braces, as sock suspenders, or by women in many places where safety-pins or various snaps and catches are now employed. The invention, which has been supplied to the Royal Army Medical Corps and Red Cross as

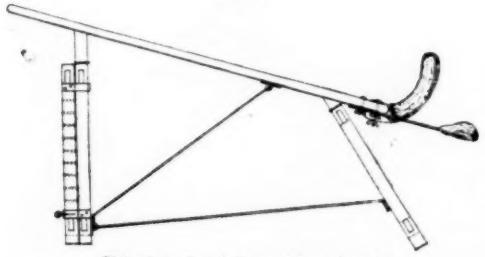
FIG. 2.

well as to the Royal Army Clothing Department, is made in various sizes and with sharp and blunt points according to the nature of the article or the texture of the material for which the hooks are required. The retail price is 3½*d.* a dozen, and the makers are Messrs. Kirby, Beard and Co., Limited, London and Birmingham.

AN INCLINED PLANE FOR THE TREATMENT OF "GASSED" CASES.

THE leading symptom of men "gassed" in the trenches appears to be the quantity of fluid which is generated in the lungs, which seems to cause suffocation. In these cases emetics have been utilised to expel the fluid. I propose now to draw attention to the possibility of the inclined plane being used with advantage under these circumstances. I have had several cases of lung disease complicated with a large exudation of mucus or pus in which this treatment has been employed with marked success, and I would urge that the treatment be tried in similar cases due to poisonous gas. For this purpose I have had constructed an inclined plane. (See Fig. 1.) It consists of a board 4 ft. 2 in. by 1 ft. 7 in.

FIG. 1.

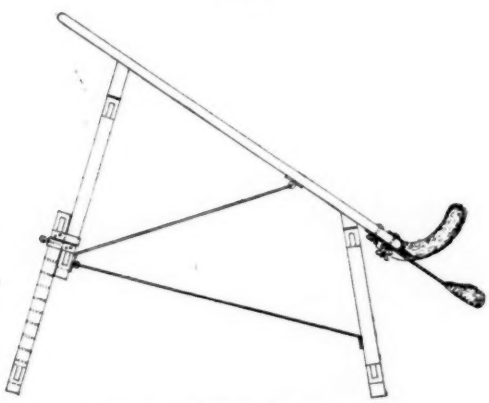


Side view: board down at lowest angle.

At one end are two uprights, intended to take the shoulders, and to allow the head to hang over the end of the board. At the same end is a half-hoop of iron, three-eighths of an inch wide and about one-eighth of an inch thick. This extends 9 in. beyond the end of the board. The uprights for the shoulders and the head-piece are covered with padded leather for the shoulders and head to rest against. The board has legs, which are capable of extension, so as to raise the board to any angle required. (Fig. 2.) For all practical purposes I have found that an angle of 30° is sufficient and as much as the patient will stand. The legs are capable of being extended and of being folded up. I would recommend that this pattern be constructed and distributed amongst hospitals and ambulances. The board is also very useful for draining the water out of the drowning while performing artificial breathing.

The patient lies with his face downwards and head resting on the head-rest. Oxygen can be administered during the time and massage of the chest walls with pressure over the lungs. In this way the fluid is encouraged to flow from the chest. A mug should be placed immediately under the head for the patient to spit into. It is also very important for the patient to keep his arms by his side and that he be not allowed to put them under the chest or head, as the head ought to be the most dependent part. The patient lies for about 10 minutes on the board for the first time. I have had a man of 76 lying for this length of time with his head down. Young patients will lie for a much longer period without any discomfort. In cases of bronchiectasis and chronic bronchitis I have seen the pus run out of the mouth almost immediately on the

FIG. 2.



Side view: board up at highest angle.

patient assuming the inclined position, and have successfully drained a case of empyema opening into the lung. The last case referred to was the case in which I first tried the treatment, and has been seen by several medical men. My object at the present time, however, is not to draw attention to these cases but rather to the method of treatment possible in cases of water-logged lungs, which seems to be of such urgent importance at the present time.

Bournemouth. W. T. GARDNER, M.B. Lond.

PS.—The board has been improved since the above drawing was made by putting on a pair of hinges to the legs at the top, so that they fold up, and instead of the struts shown in the picture I have a pair of jointed struts; these are made of pieces of iron ¾ inch wide and nearly ¼ inch thick and 2 feet long. In this way the legs of the stretcher fold up under the board, making it very simple to move about, which is very important for military purposes. It could be used also for a temporary operating table if the legs were made equal in length.

LITERARY INTELLIGENCE.—Messrs. J. and A. Churchill announce the forthcoming publication of a sixth edition of "A Text-book of Pharmacology and Therapeutics," by A. R. Cushny, F.R.S., Professor of Pharmacology, University of London; a fourth edition of "A Manual of Midwifery," by T. W. Eden, M.D., Obstetric Physician to Charing Cross Hospital; and a fourth edition of "Elementary Hygiene and Sanitation, with Special Reference to the Tropics," by W. T. Prout, M.B., C.M.G., Medical Adviser to the Colonial Office.

THE LANCET.

LONDON: SATURDAY, JULY 10, 1915.

The Taxation of Hospitals.

DURING a war of the present magnitude every charitable institution is necessarily feeling a strain upon its resources. All expenses are larger than those to which the institutions have been accustomed in time of peace. Not only is it more difficult to fill the various appointments on account of the number of employees who have joined the army, but those who remain put forward claims for increased payment, and these claims it is difficult to resist. Indeed, it is impossible not to see the force of the employees' view. The engineers, porters, and other members of the working staff, who now ask for increased payments, are being charged more highly for all the necessaries of life. Further, these increased charges are felt by the charitable institutions, who have to meet numerous requests to vary their contracts for the ordinary supplies of the institutions. The price of the various foodstuffs has increased, coal is much more expensive, and the institutions must either make an effort to meet many demands for higher market rates, or they must be embarrassed by a shortage of supplies which are essential for the maintenance of their work. In spite of these additional expenses charitable institutions have to face the embarrassment of a falling subscription list. It is inevitable that, in a time of special stress, charitable impulses should be diverted from their original channels. It is impossible to view the large sums already accumulated for the sick and wounded without realising that these may be swollen by donations withdrawn from their customary destination. We all feel that it is essential that we should individually play our part in the great struggle, but the thing which appears to appeal most urgently is that which is kept most prominently before us. All who read the daily lists of wounded feel a desire to help those who have so bravely done their share in defending the country; and some in responding to more urgent appeals forget the ever-present needs of the great medical charities, or do not perceive that those needs have been gravely aggravated by the war.

Unquestionably many of our hospitals would have closed some of their wards owing to the falling off of subscriptions had it not occurred to the managing committees that the beds should be available in the public service for the reception of wounded, for whom some payment would be anticipated from the State. Those charged with the control of public funds would in turn deem it a duty only to pay what might be regarded as cost price. In other words, it is fairly certain that the State payments made to hospitals on behalf of sick and wounded cannot be considered as a means of swelling the balance of institutions which have been living precariously on public contributions; these would still find themselves in a position of anxiety, although their wards were full to overflowing with civil and military patients. In these circumstances it becomes somewhat interesting to inquire how far these charitable institutions are receiving considerate treatment from those charged with arranging their taxation. It is at all times a moot point whether charitable institutions like hospitals, maintained by public contributions, should be called upon to pay rates and taxes. Long since it was decided that, unless expressly stated in the terms of bequest, every legacy should pay full duty, but it seems rather hard to understand some other features of the present system of taxation of hospitals. It is true that hospitals ordinarily cover a large space of ground which might otherwise have been occupied by dwelling houses or offices which would have paid rates to the local authorities, but we must not make general deductions in this direction. In localities where hospitals are likely to be erected—that is, in poor districts—it is highly probable that the rateable value of the land has been steadily diminishing; in fact, it is possible that the site may have been acquired on account of the rapid exodus of better-class residents before the incursion of poorer neighbours. Local taxation must at all times be difficult to regulate, since no one would seriously attempt to appeal to the charitable instincts of any local taxation authorities. But it is not those authorities only who seem to view hospitals as a source of revenue. Every charitable institution must make provision against the risks of fire, and in the metropolis the Water Board seems to see an opportunity of further depleting funds which have been contributed for the support and treatment of the sick. In addition to the ordinary water-rate a charge is based upon the number of hydrants in the building, and this is levied annually although the seal upon each hydrant may never have been broken. Although the annual payment is made the water must not be used except in the event of fire. The greater the care bestowed in providing hydrants to secure safety the larger is the contribution demanded from the institution. If it were a question of protecting property instead of saving life, it would be more economical to insure and let the building blaze than to meet this annual charge for a water-supply which may never be utilised. Hospitals are not fairly treated in this matter.

The anomaly has been carried a step further in a discussion in the House of Commons which will have been read by many of our readers in the daily papers, and of which a brief account appears this week in our columns. It will

be remembered that it had been suggested that an additional duty on immature spirit might be remitted when the spirit was used in medicinal preparations, and there had already been some discussion about the definition of what might be properly described as "medical preparations." The question was originally raised on the broad line of remitting additional duty for all such preparations. This concession would undoubtedly be extremely welcome to those whose business it is to prepare medicines for public or private use. It was further proposed to insert in the Finance (No. 2) Bill a paragraph to authorise the use of duty-free spirit in hospitals in the preparations of tinctures, and a clause was introduced providing for the repayment of any duty paid in respect of spirits contained in, or used in, the manufacture of these articles in a public hospital. A "public hospital" was defined as one supported by any public authority or wholly or partly out of any public or charitable funds, or by voluntary subscriptions. It might have been thought that this concession to the needs of hospitals would have been received with general approval by medical men, since there could be no doubt that the spirit employed in hospitals, as defined, was used for the purpose of charity. Inasmuch, however, as the clause appeared to give preferential treatment to hospitals which did not apply to medicines prescribed or dispensed outside such institutions, whether by medical men or by pharmacists, opposition to the clause has been raised, with the support of the British Medical Association, of the Pharmaceutical Society, and, presumably, of the temperance party. It would seem somewhat doubtful whether the clause can be maintained unless those who oppose it withdraw their opposition or explain fully their motives in such a way that their objections can be met. A letter from Mr. F. A. HOCKING, the pharmacist to the London Hospital, which appears in our columns this week, suggests, with every appearance of reason, that those who have opposed the clause have not understood the situation.

Tuberculosis in South Africa.[1]

MANY of the problems of tuberculosis in South Africa are as complex as those at home, and the study of the subject contained in the final report of the South African Commission deserves careful attention. The Commission, consisting of Dr. A. J. GREGORY (chairman), Mr. R. JAMESON, Dr. T. TE WATER, Dr. CHARLES PORTER, and Dr. G. A. TURNER, was appointed early in 1912 to make a comprehensive survey of the incidence of the disease and the conditions of its prevalence, and to recommend administrative action. The result of their labours is now embodied in a Blue-book of some 350 pages, and we recommend the perusal of the volume to our readers as the circumstances detailed are striking.

A couple of generations back there was not a great deal of tuberculosis in South Africa, and though in this respect different parts of the continent varied considerably, there was never much among Europeans until South Africa acquired a reputation for the climatic cure of the disease, and a large immigration of phthisical cases took place. Even at the present day, however, it does not appear that the European race, whether colonial or foreign born, is subject in any high degree to active tuberculosis, the prevalence of which, except in a few places specially frequented by overseas cases, is proportionately less than that of England and Wales. With the miscellaneous "coloured" or "mixed" races, as distinct from the native populations, the position is otherwise. With them the disease has been of long standing in those parts of the Union which were first brought under European settlement, and now is computed to be from four to six times as prevalent as among the European races. Tuberculosis in this section of the community is most common in the larger towns, and attributable mainly to overcrowding and unsatisfactory hygienic conditions, some of which have lately been rectified by local authorities with good results in the diminution of the disease. The section most severely attacked of all, however, is the native population, which is suffering to an increasing degree from the results of "urbanisation" and "industrialism" of quite recent date. It is true that kaffirs, Basutos, and other native races formerly lived for generations in huts and villages the condition of which was most favourable to the dissemination of tuberculous infection, but their communications with the outer world were comparatively limited, and they lived largely in the open. In present-day conditions they crowd into insanitary and airless compounds, they are freely in contact with infection, and when engaged in the mines they are often subject to peculiarly deleterious conditions of employment. Many of the natives are specially susceptible through not being in any sense naturally immunised, as they are only in the first generation of those exposed to tuberculous infection and urban or industrial environment. Marked differences exist between the several classes of natives in their susceptibility, which are probably dependent partly on race and partly on differences in dietary and in ability to resist fatigue. The Commission considers that the adoption by the native of European clothing in place of the simple blanket is a potent cause of predisposing chill and is otherwise detrimental. Much of the severity and prevalence of the disease, again, probably results from concurrent syphilis, which is enormously prevalent among the native races. The Commission has made praiseworthy efforts to present in figures the position of affairs as respects tuberculosis incidence and mortality among the natives, but it must be admitted that little can be deduced from

[1] Union of South Africa: Report of the Tuberculosis Commission. The Cape Times, Government Printers, Cape Town. Price 5s. 6d.

the available statistical data, which in nearly all cases must be subject to wide deductions and allowances. As regards the mines, however, it is particularly noticeable that the incidence of tuberculosis in the diamond workings, and to some extent also in the gold mines, is very much greater among those employed below ground than among the surface workers. The same considerations apply to another scourge of the South African mines—infective pneumonia, the epidemic prevalence of which has also been studied by the Commission. Both diseases must be responsible for an enormous amount of industrial inefficiency.

The Commissioners recommend an abundance of administrative measures both for dealing with the tuberculous cases and with environment, ranging from the establishment of tuberculosis dispensaries to the systematic examination of cattle and measures for effectually preventing the consumption of tuberculous milk and meat products. In regard to housing in the native compounds, and particularly to the conditions of native labour in mines, it would seem that something of the nature of an intelligent sanitary dictatorship would usually be required if effective progress is to be made. We do not venture an opinion whether in the great mining areas this can best be secured, as Dr. GREGORY urges, by the administration of a special board of health, set up by the Government, or, as the majority of the Commissioners hold, by developing and greatly strengthening the public health machinery which is at present possessed by the municipalities. When South Africa can turn its full attention to this important health matter, as we hope may soon be the case, this question will doubtless be decided. In any event, the findings on which the Commissioners are agreed should leave the South African Government in no doubt as to the objects to be pursued, or as to the reforms in social and other conditions which will have to be urgently taken in hand if the toll of tuberculosis among the native races is to be materially reduced.

THE OXFORD OPHTHALMOLOGICAL CONGRESS.—This congress will be held at Keble College, Oxford, on July 15th and 16th. Papers will be read and discussions will take place in the department of human anatomy in the University Museum. The scientific and commercial museums will be held in the same buildings. On July 14th, the day preceding the congress, an unofficial dinner will be held in Keble hall, and for July 17th river excursions and other entertainments have been arranged. Members who intend to be present are requested to send the attendance fee (10*s.* 6*d.*) to the honorary secretary, Mr. Bernard Cridland, F.R.C.S., Salisbury House, Wolverhampton.

THE HOLT BEQUEST FOR LIVERPOOL.—Under the Holt Educational Trust, established to commemorate the services of the late Messrs. A. and P. H. Holt to the Ocean Steamship Company, Limited, of which they were the founders, a sum of £20,000 will be applied in perpetuity for the purpose of higher education in Liverpool.

Annotations.

"Ne quid nimis."

POISONS IN WARFARE.

THE foul, if clever, recourse of the Germans to the use of poisonous gases in the field and in explosive tubes are well illustrated in a book just issued, written by a chemist and entitled "The Poison War."[1] We have here a fair amount of elementary chemistry and toxicology which will not be fresh matter to our readers, and an interesting account of the chemistry of modern explosives, their manufacture, and the materials on which their foundation is based, which will be new to most of them. Also certain facts are brought to light which show how completely the Germans have ignored the agreements which they have signed as to excluding certain devices in warfare. "The perfidious dual rôle by Germany for years past during international discussions upon the customs of civilised warfare will be better appreciated," Mr. Roberts writes, "if I say that the bulk of the Teutonic poison shells recently recovered by the French bear the date 1911 and that the poison-gas asphyxiating apparatus (described in this book) was under German military consideration in the year 1909." The last Hague Conference was held in 1907. German shell and shrapnel are described as containing considerable quantities of phosphorus. The plea has been put forward that phosphorus was used for illuminating purposes, and thus the better to ascertain the enemy's position, but unfortunately for this excuse these shells have been fired in thousands during broad daylight. The writer has evidently been in close touch with these new war devices, for he describes the incendiary pastilles, Zeppelin bombs, thermit, and so forth, in terms which show that he has actually handled these infernal machines. With regard to Zeppelin and flying-machine bombs he thinks much remains to be accomplished in the way of research and invention. The chief problem appears to be the accurate dropping of bombs, which in the present state of our knowledge have to be light in weight, with a minimum of danger to the machine's crew. On the whole, the view is favoured that these difficulties might conceivably be overcome by using wide-spreading poison instead of fire or explosives. It is doubtful whether air attacks have been so far a real menace to our insular position, but we have to reckon with an enemy absolutely unscrupulous in his methods and stopping at nothing that is contrary to all humane dictates. Finally, warfare conducted by poisonous shrapnel, gases, explosives, and bombs opens up fresh considerations for medical treatment.

THE METROPOLITAN WATER-SUPPLY.

THE report on the condition of the Metropolitan water-supply during the month of March was issued last week. Unlike February, March was a very dry month, with the temperature slightly below the average, and as a result all three raw river waters improved in chemical quality. The same was true of the filtered waters. The raw river waters

[1] The Poison War. By A. A. Roberts, Member of the Chemical Society of France, and Member of the Society of Chemical Industry. London: William Heinemann. Pp. 142. Price 5*s.* net.

of the Thames and New River contained more bacteria than their respective averages for 1914, but the raw Lee water contained fewer organisms. The filtered waters, generally speaking, gave satisfactory results, but there is apparently an exception in the case of the Lambeth supply, some difference being shown between the general filter well and pressure main results at the Lambeth works. This is receiving careful consideration in the capable hands of Dr. A. C. Houston, the Director of Water Examinations.

CONGENITAL SYPHILIS AMONG THE NEWLY BORN.

THE Local Government Board has recently issued the report of an inquiry on the prevalence of congenital syphilis among the newly born in the East End of London,[1] made for them, under a grant for auxiliary scientific investigation, by Dr. Paul Fildes, assistant bacteriologist to the London Hospital. The report appears to prove that the incidence of the disease is not nearly as great, at any rate among the section of the population selected for experiment, as has generally been supposed, and it suggests, if it does not actually prove, that the mothers of congenital syphilitics are themselves invariably the subjects of the disease. For the purposes of the inquiry it was arranged to take a series of 1000 infants in the service of the maternity department of the hospital and to perform on each the Wassermann test at the time of birth and again between the second and fourth month of life. The blood for the first test was obtained from the placental end of the cut cord, while for the second test it was obtained from the thumb or great toe of both mothers and infants by means of Wright's capsules. The statistics of the first series of tests—namely, on the placental blood at the time of birth—were as follows. Out of 1015 samples of blood thus examined 14 were found to give positive reactions. Only 1 of the infants afforded any naked-eye evidence of syphilis. From this must be drawn the surprising conclusion that only 1 case in 1015, or 0·1 per cent., exhibited manifest symptoms at the time of birth, and that only 1·3 per cent. of the infants were infected. If the series of infants examined at the London Hospital can be considered representative of the general population these figures show a much smaller incidence of syphilis among babies than is usually believed. Out of this total of 1015 infants only 660 came up for second examination between the second and fourth month, and of these only 3 gave a positive reaction, and only 1 showed naked-eye symptoms of the disease. All the mothers of syphilitic infants showed a positive reaction, but only 4 out of 27 syphilitic women had syphilitic offspring. Of the 31 healthy infants with positive placental reaction at birth, 7 were subsequently brought up between the second and fourth month for further examination; the other 6 did not attend at the hospital. All 7 babies were still found to be healthy and gave negative Wassermann reactions. On the other hand, all the mothers of these infants afforded positive reaction. It thus appears that a positive placental reaction at birth does not necessarily imply the presence of syphilis in the infant, but may simply indicate the passage of substances from the maternal blood to the circulation of the child which are capable of producing a positive reaction. It will be extremely interesting to know whether further research shows that any of those symptoms which are commonly attributed in newly born infants to a congenital infection are also due to toxic substances in the placental blood. Such a finding would clearly modify our conceptions with regard to the diagnosis as well as the treatment of congenital syphilis, and disillusionise many of those who have plumed themselves on the successful results of their anti-luetic ministrations.

[1] Report to Local Government Board upon the Prevalence of Congenital Syphilis among the Newly Born of the East End of London. By Paul Fildes, M.B., B.C. Cantab., Assistant Bacteriologist to the London Hospital. 1915. Price 2d.

MOBILISATION AND THE PLUMBERS' COMPANY.

THERE are few capable of undertaking any manual labour who would hesitate to give of their best to help their country in its hour of need, but hands that are soft, fingers that are unused to the manipulation of tools, and minds that are untrained in the nature of metals and the methods of working them—all these must unfortunately be slow to acquire the necessary degree of efficiency. Bearing this in mind, it is satisfactory to learn that the Court of the Plumbers' Company, meeting at Guildhall on June 29th, resolved, on the motion of Alderman Sir T. Vezey Strong, to offer to the Government the services of the Company in securing the mobilisation of such skilled labour as the Company is in a position to influence. The Minister of Munitions has accepted the offer, and expressed the desire that immediate steps be taken to give effect to it. The Company, through its organisation for the National Registration of Plumbers, is in touch not only with those registered, but with the trade generally throughout Great Britain and Ireland, and is accordingly issuing an appeal to the registered plumbers throughout the United Kingdom to place their services, so far as that may be practicable, at the disposal of the Government for the execution of work connected with the supply of munitions of war, or for other purposes in which their work may be of service to the State at the present time. The Company is also inviting the United Operative Plumbers' Association of Great Britain and Ireland to act jointly with the Company in issuing a similar appeal to all capable plumbers, whether registered or not, who are members of their body. This is an example which might well be followed by other City guilds who may still be in touch with the trades they represent and whose operatives might be of service in many departments other than that for the supply of explosives; much time and expense might be saved to the Government and the country by such skilled coöperation.

ILLEGITIMATE INFANTS AND FOUNDLING HOSPITALS.

WAR, with its growing death-roll and its inevitable result upon the population of our country in future years, adds appropriateness to the publication of a pamphlet by Dr. Robert Rentoul, which he entitles "Infant Murder or Foundling Hospitals," with a subtitle of "Suggested Amendments of Bastardy Acts."[1] This combination rather unfortunately tends to link up controversial topics with those as to which there is less difference of opinion and as to which the nature and quality of the opposition are

[1] Infant Murder or Foundling Hospitals. By Robert R. Rentoul, M.D. 1915. Liverpool: Booksellers Co. Pp. 12. Price 1s.

likely to differ. In discussing the question of the death-rate among illegitimate infants Dr. Rentoul can refer to statistics proving the existence of what must seem to most of us a grave public scandal, and he is able to suggest a remedy which would be likely to diminish the death-rate referred to and to increase the number of useful, healthy and efficient citizens, who would be nourished and trained instead of being left to perish. When, however, he suggests alteration of the law to enable children born out of wedlock to be made legitimate, and advocates the continuance of payments made under bastardy orders to the mother of an illegitimate child after the child's death, the increasing of such payments so that the mother as well as the child shall be maintained, the surgical sterilisation of a large class of persons admittedly undesirable as parents, besides making similar attacks upon accepted, if unsatisfactory, social conditions, he treads upon different ground, and in a pamphlet which is of very limited dimensions he has not been able to amplify his reasons for that which he recommends sufficiently to convince those likely to differ from him. Further exposition might show some of the proposals made to be more practicable, better justified by circumstances, and more likely to secure beneficial results than their bare statement can do. With regard to the promotion of institutions upon the lines of the London Foundling Hospital in order to save the lives of children now condemned to death by conditions for which they are certainly not responsible, this offers a remedy, possibly temporary and palliative, where none at present exists. If the changes, or any of them, advised by the recent Commission on the Poor-law are ever made the subject of legislation, appropriate institutions for the bringing up of infants who are illegitimate may be brought into existence by the State. Dr. Rentoul presumably intends that the State should intervene, and that the foundling hospitals which he proposes should be paid for by local or State taxation, but he does not make this very clear. He admits, however, having sought to interest Mr. Andrew Carnegie in his scheme without success, and presumably would be glad to find financial support for it experimentally from any well-disposed millionaire. That there is ample scope for the intervention of wealth is proved. Statistics cited by Dr. Rentoul show a total of illegitimate births in the United Kingdom which in a period of 22 years exceeded one million; an annual rate of illegitimate births in England and Wales which seems to keep pretty constantly between 37,000 and 38,000, and a death-rate and record of children overlain which leave little doubt as to the dangers to which the lives of illegitimate infants are exposed. To some the subject may seem one of little importance; but here we would refer again to the depletion of our race through war and its consequences, and we recommend those who are not interested as yet in the matter to read Dr. Rentoul's pamphlet, which will not take them very long, as an introduction to the study of a subject which, we suggest, is of sufficient importance to justify close and thoughtful attention.

URETHRAL CARUNCLE.

ABOUT 70 cases, which were called urethral caruncle, have been carefully examined and their features discussed by Dr. E. L. Young recently in the *Boston Medical and Surgical Journal*. As regards its pathology, in 5 out of 19 instances pathologically examined there was a very definite suspicion of malignancy, suggested by the irregularity of cell growth. The rest of the cases fall into two groups: in one the main tissue is very vascular, the angiomatous type; in the other it is typical granulation tissue. As regards symptoms, whilst burning and frequency of micturition are looked on as characteristic signs, these were absent in 26 (35 per cent.) of the cases. In these instances the patient consulted her medical attendant for various reasons. In two cases hæmorrhage, independent of micturition, was present; in seven the chief complaint was soreness or pain variously described as at the vulva or vagina. It was curious to note that the relation of the caruncle to symptoms was sometimes variable. Thus in some cases the caruncle returned after removal, yet no symptoms were present; in others, symptoms returned and yet the tumour had not recurred. Recurrence appeared to follow in practically a third of the cases, and the type of the preceding operation did not appear to influence this recurrence, since excision or cautery had been used about equally. Stricture of the urethra appears more likely to follow operation than to arise as an incident in the course of the tumour growth. Treatment is—removal. In all cases sounds should be passed to the bladder to make sure that no narrowing of the canal is present.

RECENT RESEARCHES ON SPRUE.

SPRUE is admitted to be one of the least understood, but at the same time one of the most insidious diseases known to practitioners of tropical medicine. Unless it receives prompt medical attention in its very early stages it generally goes on to a fatal termination. Unfortunately when sprue has well developed its treatment is difficult and so far has proved extremely unsatisfactory. The malady, as our readers are aware, is characterised by symptoms suggestive of a chronic affection of the alimentary tract and of the glandular organs subserving digestion. Until recently trustworthy information has been scarce concerning the circumstances under which this disease occurs in countries where it is indigenous. One of the best attempts to throw light upon this difficult subject has been made by Dr. P. H. Bahr, of the London School of Tropical Medicine, who has been conducting a series of researches on sprue in Ceylon, extending over a period of about two years: his results have just been issued.[1] He regards sprue as a malady of tropical and subtropical countries, though it may occasionally originate in temperate zones. It prevails in Ceylon among Europeans, and, contrary to what is commonly believed, it occurs also among the natives irrespective of race or mode of life. This fact along with the occurrence of the disease in people closely associated with one another suggests some specific influence or some communication of the specific cause from person to person. Sprue varies in its clinical manifestations, appearing sometimes in a mild form, and on other occasions displaying a marked virulence. Like some other serious disorders it is prone to sudden exacerbations, remissions, and periods of latency. There appear to be different and distinct varieties of the disease

[1] A Report on Researches on Sprue in Ceylon, 1912-14. By P. H. Bahr, M.A., M.D.Cantab., D.T.M. & Hy. With coloured and other illustrations. Cambridge: University Press. 1915. Pp. 155. Price 7s. 6d. net.

depending, it is thought, on the particular part of the alimentary canal that has been attacked. Researches conducted by Dr. Bahr on the composition of the stools pointed either to a complete absence or to an inadequacy of the digestive ferments; while examination of the blood and urine suggested the view that certain of the more important features of the disease are dependent upon an alimentary toxæmia. The pathological findings, too, appear to favour such a conclusion, and they seem also to point to an infection with the thrush fungus (Monilia albicans) as the cause of the malady. Although the final results of this careful and comprehensive inquiry by Dr. Bahr cannot be regarded as quite conclusive, nevertheless he has thrown a considerable amount of light upon the subject, and his work will without doubt prove of value to other investigators, serving as a basis for future researches in localities where sprue is known to be indigenous.

THE PREVENTION OF BEDSORES AFTER INJURIES OF THE SPINAL CORD IN THE WAR.

AT a meeting of the Académie de Médecine de Paris on May 18th M. Pierre Marie and M. Gustave Roussy presented an important paper on the prevention of bedsores after wounds of the spinal cord in the war. The conditions of trench warfare have rendered wounds of the spine frequent among the French soldiers, for during their assaults the Germans naturally try to attack in the flank, while shells often burst behind the lines. As the cervical and upper dorsal regions are protected by the knapsack, wounds are less frequent there than in the dorso-lumbar and sacral regions. M. Marie and M. Roussy have found that the prognosis of the paraplegia produced, though grave, is much better than the prognosis of paraplegia observed in civil life. The military surgeon should therefore not adopt the pessimistic view that if the cord is injured the patient is lost. On the contrary, remarkable improvement is possible if means are taken to avoid the serious complications—bedsores and sphincter troubles. It is generally believed that bedsores are trophic lesions, the direct result of the spinal lesion, and therefore unavoidable. This was taught by the old masters, Charcot, Vulpian, and Brown-Séquard, who knew nothing of antisepsis. M. Marie and M Roussy traverse it in their paper. They did not deny the trophic influence of the nerve centres, but they insisted that the failure of this is not sufficient to produce bedsores. One of two factors is necessary and often both combined. These are prolonged compression and infection. In a case of traumatic transverse lesion of the spinal cord with complete motor and sensory paraplegia the patient cannot change his position, and the weight of half of the trunk and of the lower limbs rests on the sacrum and heels. The prolonged compression and impaired circulation produce sloughing in parts, the nutrition of which is lowered by the spinal lesion. Added to this is the loss of sensibility, which in normal persons causes a change of posture when the least sensible discomfort from pressure is produced. The points of pressure first become red, then an ecchymotic parchment-like patch appears and soon takes the appearance of several flattened bullæ containing bloody fluid. The dry eschar thus produced is relatively benign, but is almost fatal if another factor—moisture—intervenes. This may be furnished by moist dressings or by prolonged contact with urine or fæces. Decomposing urine becomes the vehicle of innumerable microbes, aerobic and anaerobic, which penetrate into the tissues when the epidermis has been lost, and cause extensive sloughing. This view of the pathogenesis of bedsores is proved by the fact that they have no relation to the position of the spinal lesion. Whether this is upper dorsal, lower dorsal, or lumbo-sacral they always begin on the sacrum and then on the heels or other parts of the lower limbs. Moreover, they have no relation to the extent of the spinal lesion. Bedsores appear with the sphincter troubles and if these cease they disappear. A man with a wound of the spinal cord who has no incontinence ought not to have a bed sore. One who has incontinence of urine will have this complication if the most rigorous measures are not adopted. In case of retention of urine M. Marie and M. Roussy recommended, to secure that the patient need not receive special attention during the hours or days of transport to the base, that a catheter should be fixed with an obturator in the bladder. The bladder can thus be emptied from time to time by an *infirmier* or by the patient himself. The same method can be used in the rarer cases of primary incontinence. Rectal troubles are more difficult to deal with. If there are soft liquid stools opium should be given at the moment of evacuation to induce constipation. In all cases the skin should be protected with talc or coated with grease or vaseline. The patient should be placed on an air cushion or a leather cushion with a central hollow which will prevent contact of the skin with the dejecta during transport. After arrival at the base hospital the majority of the patients have bedsores. Their position should be changed at least hourly during the day and every two hours during the night. In this way, said the authors, even if deep sores have formed during transport they will yield to this attention with antiseptics and dry dressings.

LATENT FRACTURE AND FRACTURE-DISLOCATION OF CERVICAL VERTEBRÆ.

IN the *Medical Journal of Australia* Mr. Alan Newton has published a valuable paper on a subject which has not received much attention—latent fracture and fracture-dislocation of cervical vertebræ. Before the introduction of the X rays the term "latent" was applied to cervical fractures unaccompanied by injury of the cord. From time to time cases were reported of death from displacement of the fragments of an unsuspected fracture. Such injuries are probably not uncommon, and are not recognised because in the majority of cases they do not give rise to subsequent inconvenience. In 1855 Mr. Simons reported the case of a girl, aged 18 years, who fell down an embankment 12 feet high. She remained quite well until 15 days later, when she was admitted into St. Thomas's Hospital, where she died three days later. At the necropsy horizontal fracture of the body of the seventh cervical vertebra and a large abscess between the dura and the vertebræ were found. Sir Astley Cooper mentions the case of a girl who, after a severe blow on the neck, was compelled when she wished to look upwards or downwards to support her head with her hands and carefully to elevate or depress it. She died of an intercurrent disease 12 months later, and a fracture of the atlas was found. Fracture of the atlas without injury of the cord is comparatively uncommon. On the other hand, dislocation is not infrequent and may be complicated by fracture of the axis. Mr. Fred Bird has reported the case of a man who fell from

a height of 12 feet. His brother ran to him and noticed that his head was twisted forward and to the right. Believing that the man was in danger of sudden death he seized his head and gave it a sudden twist. He heard a "click," and found that the patient was able to move his head. Some weeks later he consulted Mr. Bird for neuralgia of the great occipital nerve, and a skiagram showed a partial dislocation forward of the atlas on the axis and some crushing of the arch of the latter. Mr. Newton has observed two cases of fracture of the arch of the axis which presented almost identical features. There was fracture of the pedicles with anterior displacement of the body of the vertebra, which could be palpated through the posterior pharyngeal wall. In one the patient was a muscular young man who while bicycling collided with a horse and cart. The nose of the horse struck him on the back of the head, throwing him to the ground. He at once got up, but felt a severe pain in the upper part of the neck, most marked posteriorly. The cervical spine was found in a position of slight extension and the head immobile from muscular contraction. The spines of the second and third cervical vertebræ were tender, but there was no deformity. Careful examination of the nervous system was made with negative result. A skiagram showed fracture-dislocation of the axis with fracture of the pedicles and projection forwards of the body. The treatment was immobilisation of the neck in a plaster jacket extending from the vertex of the head to the waist and rest in bed for two months, after which the jacket was removed. A month later there was no limitation of the movements of the cervical spine. In the following case fracture of the second cervical vertebra simulated fracture of the base of the skull. A boy, aged 14 years, was thrown from his pony. He was unconscious for a few hours, and upon recovery vomited much blood. Examination with the X rays revealed a fracture of the body of the axis. The detached fragment had penetrated the pharynx causing the hæmorrhage. He was kept at rest and completely recovered. The following example of latent fracture of the lower cervical vertebra, under the care of Dr. W. R. Boyd, was examined by Mr. Newton. A man, aged 50 years, while wheeling a barrow along a plank fell to the ground, a distance of 5 feet. His neck was stiff and painful, but there was no sign of injury of the cord. After the accident there remained lateral curvature of the neck concave to the right. A skiagram revealed crushing of the fourth, fifth, and sixth cervical vertebræ. Such cases show the importance of X ray examination in injuries of the neck.

REPORT OF THE MEDICAL OFFICER OF HEALTH OF THE PORT OF LONDON.

THE annual report of the medical officer of health of the Port of London (Dr. Herbert Williams) was delivered by the Sanitary Committee to the Court of Common Council on April 22nd. It has since been printed, and a copy reached us this week. It contains a full and detailed account of the work done in the port during the year 1914 by the medical officers and inspectors. As might have been anticipated, it shows some interesting influences at work owing to the great war. There is, for example, a diminution in the number of ships arriving from foreign ports owing to the closing of the Baltic and the Dardanelles and to the action of the British Fleet in preventing the arrival of vessels from Germany and Austria. Attention is also drawn to the fact that the Austrian troops have been engaged in the western area of the war; and as cases of cholera have occurred amongst these troops in Galicia, Dr. Williams thinks it possible that the infective organism of cholera may have been introduced into Belgium and the northern places, and that therefore with the onset of warm weather this danger may have to be met and guarded against. The Aliens Act, which has been in force for the past eight years, ceased to be in force with the onset of the war; the services of the medical officer, however, will probably be requisitioned here when the war is concluded. Up to Dec. 31st 13,389 refugees arrived at the port. They were all, before leaving the boat, medically examined for infectious diseases. It was not found necessary to admit any of these to the hospitals either for infectious disease or for other reasons. In regard to meat imports, it is reported that, generally speaking, meat has arrived in good condition. Very few consignments of meat from Australia have been found affected with onchocerciasis, whilst tongues arriving from South America showed marked improvement as regards the presence of actinomycosis, due largely to the thoroughness of examination in the countries of exportation. The report proves the execution of much valuable sanitary work, and the responsibilities are evidently ably discharged by the medical and inspecting staffs.

VENTRICULAR FIBRILLATION.

IT is possible, by means of the electrocardiograph, to make careful examinations of the heart in the dying subject. This can be done since the dish electrodes in which the two arms and one leg of the subject rest, offer no inconvenience to the patient who is resting in bed. The actual instrument may be in another part of the hospital altogether, and simply connected up to the particular room and bed by ordinary wires. The first clinical observations of this kind were made by Dr. G. Canby Robinson, who, in a series of cases, found that variable events occurred in the final stage of existence. In several instances, different forms of heart-block were noted for some time after clinical death; and in two cases the ventricles suddenly ceased coördinated contractions, and went into the condition known as fibrillation, the whole musculature being in a tumultuous state of disorder, small and innumerable waves of contraction spreading in all directions over its surface. Now this condition can readily be recognised by means of the electrocardiograph. The oscillations it produces are gross and irregular and void of any of that ordered sequence of waves which is so characteristic of the normal systole. Its incidence heralds immediate death, since the circulation can no longer be sustained, and a resumption of the normal rhythm is very uncommon. It may, however, revert to the normal; the organism may, as it were, be snatched back once more into life. In animals this is by no means infrequent. It has been observed in the cat and other animals, and we are informed by a well-known observer that he has noted it on one occasion in the case of the rabbit. But for long it was not thought possible that in man such an event could occur. A solitary instance, however, has been reported by A. Hoffmann, in which, for

a few fateful seconds, following an attack of paroxysmal tachycardia, the ventricles were thrown into fibrillation; the electrocardiograph revealed it, and simultaneously a clinical observer felt the pulse disappear at the wrist. The ventricles resumed their normal action and life was restored. Death due to ventricular fibrillation is sudden and immediate. It is known to be the exact cause of death following lightning stroke; it has also lately been shown that the majority of deaths under light chloroform anæsthesia was due to the same cause (Levy). It is suggested also that this condition is responsible for many of the instances of sudden deaths in heart disease in which, during life, auricular fibrillation has been present right up to the end. In the current issue of *Heart* a good series of electrocardiographic curves are reproduced showing another clinical example of ventricular fibrillation. Dr. R. H. Halsey, who reports the case, observed that before the fibrillation finally occurred the normal sequence of the heart became slow and then delayed A.V. conductivity appeared. Death ensued in this case.

THE BRITISH PHARMACOPŒIA: A FOREIGN APPRECIATION.

IN the presidential address at the recent session of the General Medical Council reference was made to the courteous action of the Belgian Government, which, notwithstanding its present difficulties, had undertaken the duty of intimating to the signatory Powers the publication of the British Pharmacopœia and the manner in which effect has been given therein to the recommendations of the International Agreement. The effort to conform with these recommendations no doubt led to sundry alterations which have caused disquiet to many who prefer going on in the old way without regard to the trend of foreign opinion. It will be a source of satisfaction to the General Medical Council to note the warm appreciation of their efforts contained in a recent review (J. J. Hofman, "Pharmaceutisch Weekblad," 1915) in which the writer, in addition to summarising the chief changes, takes occasion to refer to one feature which has been received with some uneasiness by many English critics—viz., the list of abbreviations. It is, no doubt, true that there is greater safety when no abbreviations are used, but it is also unquestionable that nearly every prescriber employs them in some form which he hopes is at once safe and intelligible, though it may be neither the one nor the other. While the abbreviations in the Pharmacopœia seem to have been introduced tentatively for use in the index, yet in the preface reference is made to their probable value to dispensers and others, especially in foreign countries, who have to interpret the prescriptions of British practitioners. The Dutch critic regards this list as a very practical improvement, since it gives "a hint to prescribers as to the manner in which the various Latin titles occurring in the Pharmacopœia may most suitably be contracted, with a view to obviating misapprehensions or ambiguities." Later in his review he reverts to the subject and says: "This is a laudable attempt to bring some regularity into the present practice of disorderly and arbitrary abbreviation, which may often give rise to very undesirable consequences." His concluding remarks touch upon two features which have scarcely been noted hitherto. "If, in conclusion, we were to give the impression which the new Pharmacopœia makes on us we would in the first place refer to the great number of *prescriptions* that are contained in it. The number and variety of these are unfamiliar and surprising to us; but especially in regard to galenicals and official compound preparations they deserve our imitation. Further, we would emphasise the terse descriptions of all the articles in the *materia medica*, a terseness which in general does no injury to precise definition, and which is a marked characteristic of the editorial style of this Pharmacopœia. Though in a few instances one could wish for greater fullness of definition in the text, in the great majority of cases the editors have omitted a vast amount of the unnecessary description, which is almost a characteristic feature of the various continental pharmacopœias." Brevity is the soul of wit, but to be combined with intelligibility it cannot be secured without effort. It will probably be gratifying to the editors of the British Pharmacopœia to find an appreciation of a concise diction in marked contrast to former volumes.

THE ACTION OF CHLORINE ON THE BLOOD.

BY H. WILSON HAKE, PH.D., F.I.C., F.C.S.,
LECTURER ON TOXICOLOGY AT THE WESTMINSTER HOSPITAL MEDICAL SCHOOL AND AT THE LONDON SCHOOL OF MEDICINE FOR WOMEN.

(*Preliminary Note.*)

I READ with much interest the leading article on Chlorine Poisoning in THE LANCET of May 15th, a subject which must naturally occupy the minds of medical men as well as the general public at the present time, considering the terrible effects of this gas on its unfortunate victims and its unprecedented and diabolical use in war.

As nothing, so far as I am aware, has been published specifically relating to the chemical action of chlorine on the blood, it occurred to me to make a few experiments in this direction. Before commencing, I thought that chlorine might perhaps alter the colour of the blood in a similar manner to that exhibited by carbonic oxide or hydrocyanic acid, an alteration which is so strikingly indicated by the differences in the absorption spectra of oxyhæmoglobin on the one hand, and those of carbonic oxide hæmoglobin and cyanmethæmoglobin on the other.

I confess I was at first a little surprised to find that with a solution of blood in water which was sufficiently dilute to show the well-known dark bands between D and E of the oxyhæmoglobin absorption spectrum, on adding chlorine water, drop by drop, the bands gradually faded in intensity and finally disappeared, leaving a complete and brilliant spectrum devoid of any bands whatever. The conclusion, on reflection, was obvious, the chlorine had destroyed the colouring matter of the blood.

I repeated this observation several times and always with the same result. When chlorine water was used a brownish filtrate was obtained, but when a few bubbles of chlorine gas were passed into the blood solution the filtrate was as absolutely colourless as distilled water. A practically colourless precipitate of albumin was formed at the same time. It then occurred to me that if the destruction of the red colouring matter of the blood was so complete, the iron it originally contained in organic combination might now be present in the solution as a ferric salt. And I found that this was so, since I obtained in the colourless

filtrate a pronounced blue colour with potassium ferrocyanide, and on adding ammonium sulphocyanide the familiar red colour of ferric sulphocyanide appeared, this latter being soluble in ether to a deep pink solution.

I tried these experiments at first with very small quantities of blood (obtained by pricking the finger in the usual way)—14, 17, and 22 milligrammes in 5 c.c. of water, but the results were not sufficiently definite, the quantity of iron present being too near the limit of those exceedingly delicate reactions to enable me to draw a convincing conclusion. This limit, however, is very considerable, since a solution of a ferric salt containing 1 part of iron in 100,000 parts of water gives a deep blue colouration with ferrocyanide (excess of the reagent must be avoided) and a well-defined reaction with sulphocyanide (which must be added in slight excess). It should be noted that a very small quantity of blood, if not too much diluted, will give a solution containing 1 part of iron in 100,000, as the following calculation shows: Assuming that roughly 100 grammes of blood contain on an average 14 grammes of hæmoglobin, and that hæmoglobin contains 0·4 per cent. of iron, then 100 grammes of blood will contain 56 milligrammes of iron, or 1 gramme will contain 0·56 milligramme.

I took, therefore, in subsequent experiments somewhat larger quantities of blood—viz., 0·224 gramme, 0·196 gramme, and finally 0·390 gramme, and dissolved in each case in 5 c.c. of water. Assuming that the whole of the iron in these quantities of blood was converted into a ferric salt by the action of chlorine, the strength of the aqueous solutions would be approximately 2·5, 2·0, and 4·0 parts of iron in 100,000 of water, and the reactions obtained after passing chlorine gas, allowing to stand long enough for the smell of the gas to disappear, and filtering, were well marked and entirely convincing. A single drop of solution of potassium ferrocyanide and six drops of deci-normal ammonium sulphocyanide solutions were sufficient for the purpose. Every precaution was taken to avoid the introduction of extraneous iron, the chlorine gas was twice washed, the apparatus was scrupulously cleaned with aqua regia and afterwards with much water, and the solution in water of the gas used was concentrated by evaporation and tested for iron with entirely negative results.

As a further confirmation I tested much larger quantities of bullock's blood with which I experimented within an hour of its being taken from the slaughtered animal. Quantities of 4·94 and 9·683 grammes, respectively, were used, and acted on with chlorine gas, the first after dilution with water and the second without previous dilution but subsequent extraction with water. In both cases, owing to the greater concentration of the solutions of the ferric salts, still more intense reactions were obtained with ferrocyanide and sulphocyanide.

I hope to continue the experiments with human blood on the lines above described, but I thought it might be of interest to publish this preliminary note in THE LANCET, as the matter possesses such a special importance at the present time, and I believe that the observations above recorded have not previously been made. Further, my experiments suggest a possibility of determining the iron in hæmoglobin directly in the blood itself, instead of after incineration as hitherto practised, and, moreover, with very much smaller amounts than have been, of necessity, previously used. I have already made some comparisons with a standard solution of ferric chloride, the results of which are encouraging in this connexion.

It is indeed no wonder, if this action of chlorine occurs in the lungs, that death in some cases should be rapid or even instantaneous, nor that, if the patient linger, his chance of recovery is not good, since unlike carbonic oxide and hydrocyanic acid, chlorine does not form a temporary compound with hæmoglobin which may possibly only suspend respiration for a time with some hope of recovery, but actually destroys the hæmoglobin with which it comes into direct contact, without possibility of reconstitution; the simultaneous precipitation of albumin *in situ* must add to its disastrous effect on the respiratory process.

Sodium Hyposulphite as a Remedy.

Kobert[1] takes a somewhat different view from that put forward in the leading article in THE LANCET. He suggests a tendency on the part of the chlorine to enter the circulation and remain in the system as such, and that it even penetrates into the brain, probably forming, in the first instance, sodium hypochlorite which in contact with the carbonic acid of the blood evolves chlorine afresh. He recommends inhalation in the form of a fine spray of a 2 per cent. solution of sodium hyposulphite containing some sodium carbonate as an antidote or palliative to chlorine poisoning in cases of accident in factories. But I have not seen any statement that hyposulphite has been given internally or by injection. In the latter form it was recommended by Lang[2]—in a 5 to 10 per cent. solution in quantities of 20 minims or more under the skin—as an antidote for hydrocyanic acid, but his experiments, which were mainly successful, were made apparently on rabbits only. Kobert notes that hyposulphite in large doses is an irritant poison, but he has prescribed it (although he does not say for what purpose, and certainly not in connexion with chlorine poisoning) in 5 per cent. solution in doses of one tablespoonful. I have no experience in such matters, not being a medical man, but it seems to me that both these methods are worth trying, especially when one considers the possible penetration into the system by the gas as above suggested by Kobert himself.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Edinburgh Students and War Service.

THE University authorities have the matter of war service during the ensuing vacation under consideration, and it is probable that a register of those willing to serve will be drawn up. In the meantime no definite statement can be made to students anxious to offer their services in this way. At the same time it may be mentioned that already an appeal has been made to senior medical students to give their services in hospitals and also to those qualified in chemistry to serve either in government laboratories doing industrial work or with the forces in France. Many other departments of the University are busy serving the Government in a manner which does not lend itself to public

[1] Intoxikationen, 1906, Band II., p. 171.
[2] Archiv für Experimentelle Pathologie, 1895. See also Dixon Mann: Forensic Medicine, 1902, p. 541.

description, but which reflects credit on the University. The managers of a well-known manufactory of explosives recently asked for the services of students willing to assist in the manufacture of munitions during the ensuing summer vacation. Over 150 students and younger graduates of Edinburgh University volunteered their services, but, unfortunately, the company were afterwards unable to accept the offer.

Treatment of Tuberculous Soldiers.

In the minutes prepared for the meeting of Edinburgh Burgh Insurance Committee on the 24th inst., the sanatorium benefit sub-committee submit a statement of the work done at the Royal Victoria Dispensary during May, 1915. At the dispensary 206 insured persons were treated out of a total of 933; and 297 insured patients out of a total of 884 were visited at their homes. A circular letter from the Scottish Insurance Commissioners was submitted, dealing with cases of soldiers discharged from the army suffering from tuberculosis. It was understood that the Army Council desired to keep available for the treatment of wounded soldiers as much as possible of the accommodation in their regular military hospitals or in those institutions which have, since the commencement of the war, been adapted to serve the purposes of military hospitals, and they were anxious that the period of the retention in such hospitals of tuberculous soldiers awaiting discharge should be reduced to a minimum. At the present time of national emergency special arrangements are desirable to ensure that the necessary transfer on discharge of tuberculous soldiers from the care of the military authorities to that of the civil authorities should be accomplished without prejudicial interruption of the individual patient's course of treatment. It had therefore been decided, said the circular, to institute certain emergency arrangements and to make special grants in connexion therewith in the case of such of these soldiers as are members of Approved Societies in order to assist the Insurance Committee in defraying the cost of their treatment.

Arrival of Wounded in Edinburgh.

On Saturday night, July 3rd, a hospital train arrived in Princes-street Station, Edinburgh, from Southampton, with 100 wounded soldiers from France. Every arrangement was made for conveying the men to hospital in comfort, the usual fleet of Red Cross motors being in attendance. Of the 100 men, 20 were stretcher cases and 80 sitting-up patients. Dalmeny House Hospital received 50 cases and a similar number were sent to the Royal Infirmary.

Edinburgh Royal Infirmary.

At a meeting of the managers of the Edinburgh Royal Infirmary held in the board-room of that institution on the afternoon of July 5th, Lord Skerrington in the chair, it was reported that the patients in hospital at last return numbered 916, and 466 were admitted during the past two weeks. Those dismissed cured numbered 327; relieved, 101; otherwise, 9; died, 39. The actual number of new cases treated during the past two weeks at the various out-patient departments was 1049, the majority of whom subsequently attended two or three times. In addition there were 70 patients in the Convalescent House, Corstorphine.

Edinburgh and the Training of Officers.

The Officers Training Corps, with senior and junior divisions, have proved valuable assets since the war commenced, and from these alone in the Edinburgh district fully 1500 young men have obtained commissions. Many have won great praise in the field. The members of these corps were soon taken up by the War Office, as well as those who have since joined, and men of education were asked to accept commissions. Although few of them had any previous military training, they also have in practically every case proved themselves capable leaders of men. It was felt, however, that it was unfair to them not to let them have some training, and to get over this difficulty training schools were started at Oxford and Cambridge Universities, where a special course of instruction is given to about 200 subalterns every month. Later Dublin and Belfast Universities commenced similar schools, and now the Military Committees of Edinburgh and Glasgow Universities have followed suit. At the first course in Edinburgh 50 infantry officers attended, but at the present course the numbers have grown to 75. A separate school for artillery officers from Territorial brigades has now been added. The officers reside at two of the University halls of residence under the mess presidency of one of their instructing officers. The instructing officers are for the most part of the various units of the Edinburgh University Officers Training Corps. The daily programme of each group of officers attending these courses, which last four weeks, consists of lectures and practical work both at the headquarters of the corps and in the country, together with three examinations on the work of the course.

July 7th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Royal College of Surgeons in Ireland.

ON July 2nd Mr. Conway Dwyer, President, conferred the diploma of the College on 27 candidates who have recently passed the final examination. Several of the diplomates were already in khaki, and the great majority are about to join the naval or military service. In an address Mr. Dwyer, referring to this fact, recalled that one of the duties of the College, as laid down by charter, was to train surgeons for the navy and army, and added that the College had sent, in proportion to its numbers, as many men to the services in the present crisis as any institution in the kingdom. He read a list of members of the College who had already won distinctions, and he referred in particular to the career of the late Colonel Dalton, R.A.M.C., who was a Fellow of the College.

The Treatment of Tuberculosis in Belfast.

It seems unfortunate that in Belfast, where there is so much tuberculosis, there should be a long delay in putting the city council's scheme for its prevention into operation. A lengthened discussion on the question took place at a meeting of the Belfast corporation on July 1st, members wanting to know why a delay of 15 months should have occurred and why so much money was being spent, with so little real progress. The point at issue is that the Belfast Insurance Committee, backed by the Insurance Commissioners, demand representation on the hospitals committee of the city council, which controls the tuberculosis scheme. The city committee is prepared to yield, but the Local Government Board object. It is hoped that the

matter will soon be settled, as it is little short of a scandal that poor consumptives in Belfast cannot get proper sanatorium treatment owing to the wretched squabbling of public boards.

Scarlet Fever in Belfast.

Of the 216 cases of infectious disease notified in Belfast between May 16th and June 19th, 177 were scarlet fever, and since that date the number of cases has been notified in an increasing ratio, as there were 39 notifications during the week ended June 26th.

Belfast Medical Men and the War.

Thirty-five physicians and surgeons, representing the Belfast Medical School, recently offered their services to the War Office to work together in a stationary or general hospital at the front, but the regulations of the Royal Army Medical Corps did not permit of their offer being accepted. The intention was to provide a group of volunteers who would work for six months at a time, and then be replaced by another group, the groups consisting of from 12 to 15, so that though individuals might change, the services of this number of physicians and surgeons would be constant during the war. The decision of the War Office was that individuals could volunteer for 12 months' service, but that no lesser term would be accepted, and that the War Office could not make arrangements to deal with a body of medical men in the way proposed. I have already alluded to the matter before, but have perhaps not brought out the Belfast feeling that a useful and even patriotic offer has been rather coldly declined.

July 6th.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

The Distribution of Funds in Belgium.

THE proceedings of the *séance* of May 27th of the Aide et Protection aux Médecins et Pharmaciens Belges Sinistrés have reached THE LANCET through Professor Jacobs. The total of subscriptions received was announced as 76,356 francs, new subscriptions of over 1000 francs having come in during the past week. The transfer of £240 to the Comité National for drugs, two grants of 700 francs each, and a petty cash expenditure of nearly £20 reduced the actual sum in hand to £740. A letter was read from a Belgian doctor in England asking that his grant should be paid into a bank for him, but it was decided that help could only be given to those still on Belgian soil, the doctor in question being referred to the British Committee.

M. Coppez reported that the pharmacists were well organised, but that the circular asking for subscriptions from medical men had not reached all whom it concerned.

M. Laruelle reported on several cases of medical men requiring assistance. He gave details of the plight of four medical men, all married men with families, whose houses had been burnt or pillaged, and who had lost furniture, books, instruments, and drugs. As all, however, had some resources remaining, the Committee decided to make no grants for the present. Of one of these doctors it was stated that he had been forced to march in front of an attacking German force and had received several wounds.

M. Breugelmans reported on the case of four pharmacists.

1. A. V. M., of L——, has six persons in his family to support from the receipts of a shop started in the neighbourhood of his previous establishment in L——, utterly destroyed. The Committee voted three "mensualities" of 200 francs for the months of June, July, and August.

2. L. L., of D——, has to support a wife and three children. He had previously refused the help of the Committee, but his attempt to carry on business had failed, and a medical friend had recommended his case to the Committee as critical. A grant was made of 700 francs.

3. J. S., of G—— R——, was killed during the bombardment of the place, and his premises were much damaged. His brother assumed charge of his affairs, and entered into engagements to preserve and restore the property which he cannot keep, as he, too, is now ruined. The children and widow are in France. The Committee decided to help the brother's attempt to preserve the property by making monthly allowances of 200 francs for July, August, and September, and by a grant of 700 francs.

4. A. de K., of L——. His premises were burnt, and for several months he was a prisoner in Germany. His physical and mental depression precludes him from earning his living, and until now he has been supported by a generous friend. Mensualities of 200 francs were granted for June, July, and August.

A short discussion followed on the supply of instruments to medical men. M. Jacques proposed that the Committee should endeavour to make purchases to meet the requests for instruments, and M. Coelst thought that grants in money might be made so that the medical man could purchase what he wanted. M. Jacques pointed out that some medical men, though needing instruments to replace what they had lost, were disinclined to approach the Committee. On the motion of M. Laruelle it was proposed to examine all the requests made for instruments and deal with each individually.

The Week's Subscriptions.

	£	s.	d.
Southern Branch, B.M.A. (per Dr. J. Green, Hon. Sec.) (eighth donation, total £62 15s. 6d.)—			
Dr. W. A. Simpson ...	0	10	0
Bournemouth Branch, B.M.A. (per Dr. E. C. Bond, Hon. Sec.) (fifth donation, total £126 9s 6d.)—			
Dr. C. W. Branson ...	3	0	0
Australasian Pharmaceutical Conference (per the Agent-General for Queensland)—			
Western Australia ...	40	0	0
Queensland	60	0	0
Victoria	23	0	0
Poverty Bay, N.Z., Division, B.M.A. (per Dr. J. Reid, Hon. Sec.)—			
Doctors, Dentists, Chemists, and Nurses	108	9	0
Dr. H. J. Macevoy... ...	5	5	0
Dr. Cecil E. Finny ...	1	0	0
Anonymous (per Bank of New Zealand, Timaru Branch)	165	0	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham-gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Ltd.

The Appeal for Surgical Instruments.

The Master of the Society of Apothecaries acknowledges the receipt of surgical instruments contributed by the following donors since the publication of the last list:—Dr. Bunting, Sunderland; Dr. T. A. Buck, Ryde.

Surgical instruments should be sent to the Master of the Society of Apothecaries, Apothecaries' Hall, Blackfriars, E.C.

THE LATE DR. DAVID GRIFFITHS.—Dr. Griffiths, of The Hollies, Pontardulais, Glamorganshire, died on June 15th, aged 71 years. For many years he was medical officer of health for the Llandilo division of the Swansea union, and he was a justice of the peace for both Glamorganshire and Cardiganshire.

ANNUAL REPORT OF THE LOCAL GOVERNMENT BOARD FOR 1913-14.

THIS report,[1] the forty-third annual issue, has recently appeared in two parts. Part I. deals with the administration of the Poor-law, the Unemployed Workmen Act of 1905, the Old Age Pension Acts, and the audit of accounts. Part II. is entirely concerned with housing and town planning.

In regard to administration of the Poor-law, it is stated that the total number of paupers of all classes in receipt of relief on Jan. 1st, 1914, in England and Wales was 761,578, being a decrease of 32,649 as compared with the corresponding figure for Jan. 1st, 1913. There are three classes of paupers for statistical purposes, the insane, the casual, and the main body of persons in receipt of relief, who are either indoor or outdoor paupers. This last class—the main body—which numbered 628,322, showed a reduction of 33,342 on the corresponding number on Jan. 1st, 1913; casual paupers, numbering 7568, were also less by 1314; but the insane, numbering 125,828, showed an increase of 1984. Pauperism is, as a whole, higher in London than in the rest of the country. Based on the number in receipt of relief on Jan. 1st, 1914, the ratio for the whole of England and Wales was 17·9 per 1000; for London it was 23·5; for Anglesey it was 28·0 (the highest county ratio); for Middlesex (the lowest) it was 11·4. All the Welsh counties, except Carmarthen and Cardigan, are among the 15 highest ratios of pauperism, Anglesey, as just mentioned, holding the first place with 28·0, and Brecknock the fifteenth place with 21·7 per 1000. The five English counties also showing excessive pauperism are Norfolk (25·9), Dorset, London (23·5), Suffolk, and Hereford. Next above Middlesex are the West Riding, Surrey, Northumberland, Lancaster, and Chester (14·9). There does not seem to be any real reason for these differences, which are probably largely due to variations in administrative methods; but the report states that predominantly rural counties show a higher rate than those containing big industrial communities. In London the excess consists entirely of the class of paupers relieved in institutions, the number of such paupers per 1000 of population being nearly three times as great in London as in England and Wales; there is a great development in the metropolis of Poor-law infirmaries and other specialised institutions. The operation of the metropolitan common poor fund, and of the grant paid by the London County Council in respect of indoor paupers, makes nearly the whole cost of institutional relief a central charge, and so, in the words of the Report, "tends to encourage the adoption of this form of relief."

Of the 264,292 paupers receiving institutional relief on Jan. 1st, 1914, 248,030 were relieved in institutions provided by Poor-law authorities, such as separate infirmaries (i.e., as now defined, places administered by "regulations distinct from those relating to the workhouse"), infirm wards of workhouses, ordinary workhouse wards, children's institutions, and imbecile and other asylums; 16,262 were cared for in other institutions, such as asylums for the blind, deaf and dumb, epileptics, &c., convalescent homes, training schools and ships. Attention is drawn to the fact that within the last ten years the number of paupers sent by boards of guardians to these special institutions has nearly doubled; their utility is becoming increasingly recognised by the Poor-law authorities.

An instructive chart shows the great change that has taken place in the kinds of pauperism during the last 25 years; the total amount is now only about 5 per cent. below the percentage prevalence of pauperism in 1889. Outdoor paupers have decreased in 1914 to 70 per cent. of the prevalence in that year, but indoor paupers have increased by nearly 40 per cent. and insane paupers by 70 per cent., this last enormous increase having been persistently regular year by year during practically the whole period. In London a most beneficial change was made a couple of years ago in the method of dealing with the homeless poor. A special committee was constituted of representatives of official bodies and charitable agencies, and the management of casual wards was transferred from the various boards of guardians to the Metropolitan Asylums Board. As a result, the decrease in "casuals" has been so great that five times during the past year the number fell below 250. Three years ago there were nearly always over a thousand in the casual wards. A number of casual wards have been closed, and the "sleeping-out class" has been almost entirely cleared from the neighbourhood of the Thames Embankment. Outside the metropolis there has also been considerable decrease in vagrancy, consequent on a change in administrative methods that has been widely adopted. The genuine wayfarer is now detained only one night, is discharged early in the morning, and is given a "way ticket," together with a "meal ticket," securing him a meal (generally of bread and cheese) at a suitable distance on his journey. There has been a distinct decrease in the number of prosecutions for begging where approved schemes of administration are working and casual accommodation is adequate. The system is favourably reported on from all parts of the country.

In regard to the medical relief of the poor during recent years the extension and improvement in the arrangements for care of the sick within the walls of an infirmary have been so great that these institutions almost occupy the place of general hospitals. On Jan. 1st, 1914, there were 87,027 adults and 11,715 children receiving relief (that is, medical treatment) in these infirmaries, hospitals, and convalescent homes. In London a great decrease has occurred in the orders given for outdoor medical relief; in 1912 these orders were fewer by 4000 than in 1911, and in 1913 there was a further decrease of more than 20,000, the actual number issued being 97,370. The number of midwifery orders decreased from 1157 to 506; this means a substantial increase in the average remuneration per order to the medical officers.

An immense amount of good is being done in the way of care for children by the Metropolitan Asylums Board; 3424 were admitted into the Board's sick and convalescent institutions in the country during the year, and a further 831 to their homes at the seaside. The managers have entered into an experimental arrangement with the Invalid Children's Aid Association for the "after-care" of children after their discharge from the managers' hospitals. There is every hope that much wastage of child life and adult incapacity for earning a livelihood will be prevented as a result of these beneficial arrangements.

Under the Unemployed Workmen Act of 1905 a grant of £100,000 was voted by Parliament for the financial year 1913-14. Of this, £49,000 were allocated to the Local Government Board in aid of the expenses of distress authorities in England and Wales. Nearly the whole of this sum—viz., £46,331—was paid to the Central (Unemployed) Body for London and various distress committees. The maintenance of the farm colony at Hollesley Bay, works in parks and open spaces under the management of the London County Council, and workrooms for unemployed women were the chief ways in which this sum was expended. It appears that all such works were of a useful and permanent character—e.g., laying drains, widening roads, planting trees, &c., thus showing a great contrast with the often useless forms of labour for labour's sake of earlier days.

It is impossible to study this report without being impressed both with the amount of thought that has been devoted to the problems of Poor-law administration and with the large measure of success that has resulted from the effectual carrying out of carefully elaborated methods of relief.

[1] London: Wyman and Sons, Fetter-lane. Part I., 1915, price 1s. 1d., Part II., 1914, price 9d.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS, IRELAND: REUBEN HARVEY MEMORIAL PRIZE.—The Reuben Harvey Memorial Prize for the year 1915 has been awarded to Mr. Bryan A. M'Swiney of Kingstown, co. Dublin, for a thesis entitled "Creatine and Creatinine."

DEATH OF DR. THOMAS SMAILES.—Dr. Smailes died at his residence, Hawthorn House, Honley, near Huddersfield, on June 24th, in his sixty-seventh year. After qualifying in 1875 he began practice in Honley, and was at one time president of the Huddersfield Medical Society.

THE RESEARCH DEFENCE SOCIETY.

THE annual general meeting of the members and associates of this society was held at the house of the Royal Society of Medicine, Wimpole-street, London, W., on June 30th. In the absence of the President, Lord Lamington, on military duties, Major-General the Hon. Sir REGINALD TALBOT, K.C.B., presided.

In opening the proceedings, the CHAIRMAN sympathetically alluded to the loss which the society had sustained since the last annual meeting by the death of many vice-presidents and members, among them being Sir William Anson, Sir Samuel Hoare, Lord Rothschild, Sir Richard Solomon, Sir Henry Littlejohn, Dr. Habershon, Lady Sieveking, and Mr. Lewin Hill. The society, he said, was a branch of the medical and scientific work of the country, and he thought it only right that he should pay a tribute to the marvellous results that had been accomplished by the medical profession in the war. Both the Royal Navy Medical Service and the Royal Army Medical Corps had contributed enormously to the welfare and efficiency of our sailors and troops. Civilian doctors and surgeons, too, in this country and in the colonies had given the greatest assistance by their counsel and advice, while the voluntary hospitals had given most valuable aid, as had also the Red Cross Society and the St. John Ambulance Association. Since its last annual meeting the Research Defence Society had been mainly occupied in trying to get people in general and soldiers in particular to understand the meaning of preventive treatment for typhoid fever, and that work had been most efficiently performed. The lectures delivered by the officials of the society had in many instances convinced soldiers of the value of inoculation, and those who had previously been reluctant to submit to it had come forward voluntarily and asked for treatment. A little four-page pamphlet which had been issued for gratuitous distribution by the society gave many proofs of the absolute necessity for inoculation against typhoid fever. In the United States of America Mr. Taft, speaking in the name of the military medical authorities in reference to the Spanish-American war, said that among 120,000 men there were 20,000 cases of typhoid fever. Following the use of anti-typhoid inoculation there was only one case in the whole force mobilised in Texas and California. Compulsory treatment was adopted in 1911. In 1913 in an army of 90,000 there were only three cases and no deaths. In France, in 1912, typhoid fever broke out in the barracks at Avignon. Of 2053 men 1366 were protected and no case of typhoid fever occurred among them, while in 687 non-protected cases there were 155 cases. Sir William Leishman had said that formerly typhoid fever among the British garrison in India had been responsible for from 300 to 600 deaths annually, but since inoculation had been introduced the mortality had sunk to 20. He (the chairman) could not understand why we in England hesitated to make inoculation compulsory when the two great republican countries had done so, recognising in it a means of practically annihilating a terrible scourge. The work of the society had been based on persuasion, and Mr. Paget, by his unexampled energy and courage, had made that work successful, though his health had suffered and he was now incapacitated from speaking. Dr. Sandwith and Sir David Ferrier had also rendered great assistance.

Lord KNUTSFORD, in moving the adoption of the annual report and statement of accounts, said that the society had been in existence for seven years, and until it was founded there had been no one to defend against calumny men of science who devoted their lives to the eradication of disease. The investigations of these men enormously lessened the sufferings of both men and animals.

Dr. F. M. SANDWITH, who seconded the motion, referred to the remarkable health of the British Army owing to the results obtained by the work of medical research.

The motion was adopted.

Sir WILLIAM OSLER, in proposing the re-election of the officials of the society, paid a tribute to the work of Mr. Paget, who, he said, was the best secretary of any society in the kingdom. In the present war we had not only to fight the Germans, but also the foes of our own household—namely, diseases, which were more formidable than bullets and bayonets. The Research Defence Society had done splendid work against the latter foe. Celsus had said that we should never get far with the treatment of disease unless we knew its cause. Fifty years ago, at the close of the Civil War in America, we had no positive knowledge of the cause of any one of the great scourges of humanity, but we now know the causes of the great majority of them. The practical bearing of this knowledge on the present war was that during the 10 months of hostilities we had had no epidemics, a most remarkable result when we remembered that this country alone has two or two and a half millions of men under arms. Such a thing had never before occurred in the history of any war. Septic wounds had been unavoidable owing to the methods of warfare and the environment in which the fighting took place, but even under these conditions 60 to 70 per cent. of the wounded were after treatment able to again take their place in the fighting line. Tetanus, which at the beginning of the war was rather serious, had now been practically abolished. We were going, he said, to have a war in which the bullet would be accountable for the larger proportion of deaths, and this would be due to protective sanitation, in the appreciation of which the society was doing something to educate the public. The motion having been seconded, was carried unanimously.

After the meeting Dr. ANDREW BALFOUR gave a demonstration with the kinematograph, explaining the protective treatment of inoculation against typhoid fever and cholera.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE undermentioned has been granted a temporary commission as Surgeon-General in His Majesty's Fleet: George Robertson Turner (dated June 19th).

The undermentioned has been granted a temporary commission as Fleet-Surgeon in His Majesty's Fleet: Cecil Hugh Myddleton Hughes (dated June 19th).

The undermentioned have been granted temporary commissions as Surgeons: Stephen Leonard Baker (dated June 30th) and John Logan Pringle (dated July 1st).

The undermentioned have been entered as Surgeons for temporary service in His Majesty's Fleet: William Smith O'Loughlin (dated June 28th) and James Drummond (dated June 29th).

The following appointments have been notified:—Fleet-Surgeons: G. Ley and P. G. Williams, to the *Victory*, additional, and J. F. Hall to R.M. Division, Portsmouth. Surgeons: W. F. Beattie and R. St. L. Brockman to the *Victory*, additional; A. Toulmin, to the *Victory*, additional, for Haslar Hospital; and G. W. Pool, to the *President*, additional. Temporary Surgeons: A. Viney to the *Vivid*, additional for Plymouth Hospital; T. Wyndham to the *Vivid*, additional; R. E. Smith to the hospital ship *Rewa*; W. Hassard to the *Ceto*; W. Lovell to the *Victory*, additional for Haslar Hospital.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon: A. G. V. Elder to the hospital yacht *Liberty*. Surgeon Probationers: P. Barlow to the *Paragon*; J. E. MacIntyre to the *Ardent*; G. E. Birkett to the *Loyal*; H. Tomlinson, D. J. Adams-Lewis, and R. Hall have been entered for temporary service.

ROYAL ARMY MEDICAL CORPS.

The undermentioned are granted temporary rank whilst employed with the Wharncliffe War Hospital:—Dated April 1st: Lieutenant-Colonel: William James Nathaniel Vincent. Dated April 1st: Majors: Daniel Gillespie and James Moir Mathieson. Dated May 19th: Captain Graham S. Simpson, 3rd Northern General Hospital, Royal Army Medical Corps, Territorial Force.

The undermentioned temporary Lieutenants to be temporary Captains:—Dated July 6th: Donald K. McDowell, C.M.G., and James G. Duncanson. Dated July 7th: Anthony B. Bradford, Herbert F. Woolfenden, Wilfred G. Mumford, Maurice Fitzmaurice-Kelly, and Mathew W. B. Oliver.

Temporary Captain Robert A. R. Wallace, having ceased duty with the Australian Hospital, relinquishes his commission (dated May 1st).

Temporary Lieutenant Alexander Fleming relinquishes his commission (dated March 3rd). Temporary Lieutenant John C. Venniker relinquishes his commission (dated July 1st).

Percy Alfred Peall to be temporary Major whilst employed with the County of London War Hospital (dated May 23rd).

Colin Francis Frederick McDowall is granted temporarily the honorary rank of Captain whilst serving at the Moss Side Military Hospital (dated July 2nd).

The undermentioned are granted the temporary rank of Major whilst employed with the Beaufort War Hospital:—Robert Atwood Beaver (dated May 23rd) and Thomas Mill (dated May 26th).

The appointment to a temporary Lieutenancy of Joseph B. Dawson is antedated to March 25th.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Lieutenants (on probation) William Murdock and Robert O. C. Thomson are confirmed in their rank.

TERRITORIAL FORCE.

Royal Army Medical Corps.

2nd East Anglian Field Ambulance: Lieutenant James Arthur to be temporary Captain.

1st London (City of London) Field Ambulance: Captain Douglas G. Rice-Oxley, from Attached to Units other than Medical Units, to be Captain. William Reginald Huleatt Heddy to be Lieutenant.

3rd Lowland Field Ambulance: Captain Archibald C. McMaster is seconded on his appointment as Resident Surgeon to the Military Hospital at Bangour.

2nd Eastern General Hospital: Charles Hilary Bryant to be Captain, whose services will be available on mobilisation.

4th London General Hospital: Percy Brewster Ridge to be Captain, whose services will be available on mobilisation.

2nd Northern General Hospital: Walter Longley to be Lieutenant.

1st London (City of London) Sanitary Company: The undermentioned to be Lieutenants: Colin Charlwood Frye, Archibald Romanes, Harry George Andrew Pearson.

East Anglian Casualty Clearing Station: Joseph Green to be Lieutenant.

3rd East Lancashire Field Ambulance: Lieutenant William P. Ferguson to be temporary Captain.

3rd South Midland Field Ambulance: Captain Charles Corfield to be temporary Major.

Sanitary Service: Robert Arthur Lyster to be Captain, whose services will be available on mobilisation.

North Midland Mounted Brigade Field Ambulance: Lieutenant Lionel A. Dingley to be Temporary Captain.

Yorkshire Mounted Brigade Field Ambulance: Surgeon-Captain Robert A. Draper, from East Riding of Yorkshire Yeomanry, to be Major.

2nd Western General Hospital: Major Joshua J. Cox is seconded while acting as Chief Recruiting Medical Officer for Manchester.

2nd South Midland Mounted Brigade Field Ambulance: William Vincent Wood to be Lieutenant.

2nd South Western Mounted Brigade Field Ambulance: Charles Duncan Relton to be Lieutenant.

6th London Field Ambulance: Captain Samuel R. R. Matthews, from Attached to Units other than Medical Units, to be Captain.

3rd London General Hospital: Lionel Litchfield Preston to be Lieutenant.

4th Northern General Hospital: Lieutenant-Colonel Charles Harrison resigns his commission on account of ill-health.

1st Southern General Hospital: John Weston Stretton to be Captain, whose services will be available on mobilisation.

3rd Southern General Hospital: Thomas Bingham Marshall to be Captain, whose services will be available on mobilisation.

4th Southern General Hospital: Captain George C. Sandford to be temporary Major.

2nd London Casualty Clearing Station: Ernest Horsford Bingley (late Surgeon-Captain, Bengal Nagpur Railway Volunteer Rifles), to be Captain (temporary).

Attached to Units other than Medical Units.—Robert Vacy Clifford Ash to be Lieutenant.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The *Journal of the Royal Army Medical Corps* for March, which has just been issued, opens with a Medical Narrative of the Arrangements of the First Division at the Battle of the Aisne, by Colonel G. Cree, C.M.G. The narrative will be read with interest as showing not only the splendid initiative of the Royal Army Medical Corps, but also the difficulties under which it had to work. In a laboratory study of cerebro-spinal meningitis in the Salisbury Plain area during the early part of this year Lieutenant C. H. Treadgold states that he came across no evidence in favour of the disease being transmitted by blood-sucking insects such as lice. Lieutenant W. S. R. Steven has a report of an Investigation in regard to the Prevalence of Malaria among Troops stationed at Karachi in 1913. Lieutenant C. Hamilton Withers, R.A.M.C.(T.), describes (1) a new pattern stretcher designed for use more particularly in cases where the patient is liable to pain and discomfort when by necessity he has to be repeatedly lifted on and off the regulation stretcher; and (2) an apparatus for the unloading of the sick from hospital ships. Colonel R. H. Firth has again returned to "Some Musings of an Idle Man," the outcome of one of these being "that death is really an awakening to a fuller life, and has no actual claim to be regarded as a sleep or rest and still less as a 'destroying angel.'" Death's symbol, he says, "is a comma rather than a full stop, while the ceremonial of earthly burial is better ritualised by the sounding of *reveille* than the Last Post."

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 7779 births and 4155 deaths were registered during the week ended Saturday, July 3rd. The annual rate of mortality in these towns, which had declined from 13·9 to 12·3 per 1000 in the four preceding weeks, further fell in the week under notice to 11·9 per 1000 of their aggregate population, estimated at 18,136,180 persons at the middle of last year. During the 13 weeks of the quarter just ended the mean annual death-rate in these towns averaged 15·1, against a corresponding rate of 15·2 per 1000 in the metropolis. The annual death-rate last week ranged from 5·2 in Ilford and in Reading, 5·6 in Tottenham, 5·7 in Acton, 5·9 in Hornsey, and 6·1 in Lincoln, to 16·9 in Gillingham, 17·3 in South Shields, 17·8 in Carlisle, 19·5 in Gloucester, and 24·3 in Middlesbrough.

The 4155 deaths from all causes were 138 fewer than the number in the previous week, and included 328 which were referred to the principal epidemic diseases, against numbers declining from 489 to 370 in the four preceding weeks. Of these 328 deaths, 132 resulted from measles, 67 from infantile diarrhœal diseases, 57 from whooping-cough, 39 from diphtheria, 18 from scarlet fever, and 15 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases did not exceed 1·0, against 1·1 per 1000 in each of the two preceding weeks. The deaths attributed to measles, which had declined from 239 to 157 in the four preceding weeks, further fell to 132 last week, and caused the highest annual death-rates of 1·1 in West Ham, 1·2 in Manchester, 1·3 in Preston, 1·5 in West Bromwich, 1·7 in Exeter, 1·9 in Sheffield, 2·2 in Walsall, 3·7 in Derby, and 4·9 in Middlesbrough. The deaths of infants (under 2 years) referred to diarrhœa and enteritis, which had been 90, 68, and 68 in the three preceding weeks, were 67 last week, and included 12 in London, and 5 each in Birmingham and Manchester. The fatal cases of whooping-cough, which had been 75, 60, and 62 in the three preceding weeks, fell to 57 last week, of which 20 occurred in London and 3 each in Leicester and Wigan. The deaths attributed to diphtheria, which had been 33, 45, and 46 in the three preceding weeks, declined to 39 last week; 4 deaths were registered in London, and 3 each in Stoke-on-Trent, Birmingham, and Hull. The deaths referred to scarlet fever, which had been 29, 29, and 25 in the three preceding weeks, further fell to 18 last week, of which 4 belonged to London, 3 to Liverpool, and 2 each to Nottingham and Stockton-on-Tees. The fatal cases of enteric fever, which had been 7, 10, and 12 in the three preceding weeks, further rose to 15 last week, and included 5 in Manchester and 3 in London.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had increased from 2252 to 2422 in the five preceding weeks, further rose to 2446 on Saturday last; 348 new cases were admitted during the week, against 330, 330, and 332 in the three preceding weeks. These hospitals also contained on Saturday last 1022 cases of diphtheria, 56 of measles, 52 of enteric fever, and 11 of whooping-cough, but not one of small-pox. The 1010 deaths from all causes in London were 12 fewer than the number in the previous week, and corresponded to an annual death-rate of 11·7 per 1000. The deaths referred to diseases of the respiratory system, which had steadily declined from 469 to 144 in the 11 preceding weeks, were 145 in the week under notice, and were 19 above the number recorded in the corresponding week of last year.

Of the 4155 deaths from all causes in the 96 towns, 199 resulted from different forms of violence, and 333 were the subject of coroners' inquests, while 1270 occurred in public institutions. The causes of 48, or 1·2 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London and in its 14 suburban districts, in Manchester, Sheffield, Leeds, Bristol, Bradford, and in 56 other smaller towns. Of the 48 uncertified causes, 8 were registered in Gillingham, 6 in Liverpool, 5 each in Stoke-on-Trent and Birmingham, 4 in St. Helens, 3 in Bolton, and 2 each in Warrington, South Shields, and Gateshead.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns, with an aggregate population estimated at 2,345,500 persons at the middle of this year, 1013 births and 747 deaths were registered during the week ended Saturday, July 3rd. The annual rate of mortality in these towns, which had declined from 18·9 to 15·7 per 1000 in the four preceding weeks, rose to 16·6 per 1000 in the week under notice. During the 13 weeks of the quarter just ended the mean annual death-rate in these towns averaged 18·1, against 15·1 per 1000 in the large English towns. Among the several towns the death-rate last week ranged from 9·3 in Ayr, 10·0 in Motherwell, and 10·5 in Clydebank, to 19·0 in Glasgow, 19·4 in Dundee, and 19·6 in Aberdeen.

The 747 deaths from all causes were 39 in excess of the number in the previous week, and included 120 which were referred to the principal epidemic diseases, against numbers declining from 148 to 133 in the three preceding weeks. Of these 120 deaths, 74 resulted from measles, 18 from infantile diarrhœal diseases, 14 from whooping-cough, and 7 each from scarlet fever and diphtheria, but not one from enteric fever or from small-pox. The mean annual death-rate from these diseases was equal to 2·7, against 1·0 per 1000 in the large English towns. The deaths attributed to measles, which had been 80, 89, and 79 in the three preceding weeks, further fell to 74 last week, and included 53 in Glasgow, 10 in Aberdeen, and 3 in Dundee. The deaths of infants (under 2 years) referred to diarrhœa and enteritis, which had been 12, 17, and 12 in the three preceding weeks, rose to 18 last week, and included 6 in Glasgow and 4 in Dundee. The fatal cases of whooping-cough, which had been 40, 19, and 25 in the three preceding weeks, fell to 14 last week, of which 7 occurred in Glasgow, 3 in Aberdeen, and 2 in Edinburgh. The deaths attributed to scarlet fever, which had been 12, 5, and 12 in the three preceding weeks, fell to 7 last week, of which 3 belonged to Aberdeen. The 7 deaths referred to diphtheria were equal to the average in the earlier weeks of the quarter, and included 4 in Glasgow.

The deaths referred to diseases of the respiratory system, which had declined from 145 to 92 in the four preceding weeks, rose to 99 in the week under notice, and were 36 above the number in the corresponding week of last year. The deaths from different forms of violence numbered 38, against 21 in each of the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland, with an aggregate population estimated at 1,212,380 persons at the middle of this year, 646 births and 387 deaths were registered during the week ended Saturday, July 3rd. The annual rate of mortality in these towns, which had been 15·4, 14·2 and 14·8 per 1000 in the three preceding weeks, further rose to 16·6 per 1000 in the week under notice. During the 13 weeks of the quarter just ended the mean annual death-rate in these towns averaged 18·4, against corresponding rates of 15·1 and 18·1 per 1000 in the English and Scotch towns respectively. The annual death-rate last week was equal to 18·6 in Dublin (against 11·7 in London and 19·0 in Glasgow), 13·1 in Belfast, 19·0 in Cork, 26·6 in Londonderry, 25·7 in Limerick, and 9·5 in Waterford, while in the 21 smaller towns the mean death-rate was 16·1 per 1000.

The 387 deaths from all causes were 42 in excess of the number in the previous week, and included 24 which were referred to the principal epidemic diseases, against 25 and 23 in the two preceding weeks. Of these 24 deaths, 10 resulted from infantile diarrhœal diseases, 6 from whooping-cough, 4 from measles, and 2 each from enteric fever and diphtheria, but not one from scarlet fever or small-pox. The mean annual death-rate from these diseases did not exceed 1·0, against corresponding rates of 1·0 and 2·7 per 1000 in the English and Scotch towns respectively. The deaths of infants (under 2 years) attributed to diarrhœa and enteritis, which had been 2, 7, and 4 in the three preceding weeks, rose to 10 last week, of which 5 were registered in Dublin and 2 in Belfast. The deaths referred to whooping-cough, which had been 9, 6, and 4 in the three preceding weeks, rose to 6 last week, and included 4 in Belfast. The fatal cases of measles, which had been 7, 6, and 8 in the three preceding weeks, fell to 4 last week, of which 2 occurred in Belfast. The 2 deaths from diphtheria were registered in Belfast, and those from enteric fever in Londonderry and Limerick.

The deaths referred to diseases of the respiratory system, which had been 64, 57, and 42 in the three preceding weeks, rose to 64 in the week under notice. Of the 387 deaths from all causes 127, or 33 per cent., occurred in public institutions, and 8 resulted from different forms of violence. The causes of 14, or 3·6 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 96 large English towns the proportion of uncertified causes was 1·2 per cent.

Correspondence.

"Audi alteram partem."

HOSPITALS AND THE SPIRIT DUTIES.

To the Editor of THE LANCET.

SIR,—The large amount of space devoted to "Hospitals and the Spirit Duties" renders this week's *Pharmaceutical Journal* peculiarly interesting to a hospital pharmacist. As a pharmacist who has spent 25 years in the service of three voluntary hospitals, and who is associated with two other hospitals in an advisory capacity, I would remark that much Parliamentary time and printer's ink would be saved if writers and speakers were to make themselves more conversant with the organisation and routine of hospital pharmacy.

"Observer" conjures up visions of smuggling by out-patients. On the average an out-patient takes away from this hospital a total of 42 minims of duty-paid spirit during his or her course of treatment. What would be the possibilities of smuggling if these 42 minims were duty-free? A card of printed instructions is issued to each dispenser specifying the maximum amount of any preparation to be supplied to each patient per week. For liniments the quantity is 1 oz. if applied by a brush, 3 oz. if applied by friction. This disposes of any necessity on the part of a dispenser to ask the patient how much is required, and incidentally destroys Mr. Glyn-Jones's "pint of liniment" theory. If the public acted upon Mr. Glyn-Jones's dictionary definition of potable in respect of "all medicines" the coroners of this country would be the busiest men in England. It is a very common thing for medical men to ask a hospital pharmacist to explain why a chemist charges so very much more for drugs than a hospital pays for them. If spirit is to cost a hospital less than it costs the chemist it would be but one more instance to explain. In view of this and many other points which might be raised Mr. Glyn-Jones's remarks on the training of medical students have little or no force.

Mr. Glyn-Jones's criticisms appear to be—(1) The difficulty of defining a hospital; (2) the possibility of unlimited use of duty-free spirit; (3) the question of safeguards; (4) the question of rebate; and (5) the incentive to intemperance.

With regard to 1. The difficulty of finding a definition is not insuperable. The question of duty-free spirit has been before the voluntary hospitals for many years, and as they are the institutions most concerned, I suggest one way of getting over this difficulty would be to regard as hospitals only those institutions which are eligible to receive grants from the King Edward's Hospital Fund for London or the Metropolitan Hospital Sunday Fund and such provincial institutions as would be, if situated in the metropolitan area, eligible for grants. Such definition would exclude all homes, &c., run for private profit, and all rate-supported institutions.

2. The quantity of absolute alcohol (duty-free) for scientific purposes is limited by the Revenue authorities, both as to the amount allowed per annum and the amount in stock at any one moment. Apply this principle to duty-free spirit for dispensary use, and the possibility of unlimited consumption vanishes. Any hospital would gladly accept such restriction, to be fixed as the average annual consumption of the last three years.

3. Absolute alcohol (duty-free) is in some institutions under the charge of the chief dispenser, who is responsible for its storage and issue. This is so at the London Hospital. I have never heard of any abuses arising from this concession, and consequently see no grounds for supposing abuses would arise if duty-free spirit for dispensary purposes were allowed. No revenue officer is appointed to this institution.

4. I do not agree with the proposal of giving a rebate on tinctures bought ready-made. As most hospitals make their own tinctures, such a rebate would be claimed by small hospitals only, and the sum of money involved would not be worth the amount of trouble required.

5. As a total abstainer of the most rigid description, I utterly fail to perceive how anyone, other than members of the dispensary staff, are going to get at Tr. Aurant. or Tinct. Card. Co. for purposes of tippling; and if a dispenser or porter did so he would be detected most speedily.

Mr. Glyn-Jones, as its Parliamentary secretary, voices the opinions of the Pharmaceutical Society, but in order to gain juster views of the question I would appeal to him to visit some of the metropolitan voluntary hospitals to gain an insight into their organisation. Further, if a committee is ever appointed to consider this question, might not room be found thereon for a representation of hospital views?

I am, Sir, yours faithfully,

F. A. HOCKING, B.Sc. Lond.,

London Hospital, E., July 3rd, 1915. Pharmaceutist.

THE TREATMENT OF ACUTE LOBAR PNEUMONIA.

To the Editor of THE LANCET.

SIR,—The tone of your comments in the annotation under this heading in your issue of June 26th on Mr. A. J. Mathison's drug treatment of acute lobar pneumonia induces me to send you my own experience of the disease. Mr. Mathison is by no means the only one who has ventilated in the public press a specific for pneumonia.

In THE LANCET of Jan. 16th, 1909 (p. 160), there appeared an article from the pen of Dr. Daniel Crowly of Loughrea, County Galway, under the title "An Efficient Treatment for Pneumonia." The method adopted was a deduction from the writings of Dr. W. Ewart, and consisted in the exhibition of citrates in large doses. Dr. Crowly made use of the following formula:—

Potass. iodidi	gr. iv.
Potass. citratis	gr. x.
Liq. ammonii citratis	℥ss.
Aq. ad ℥i.	

Every four hours.

With the prevalent views of the pathology of acute lobar pneumonia and the accepted therapeutic properties of both the iodides and the citrates, that prescription appealed to me as a pre-eminently rational one to be written against the disease in question. I made a note of it and prescribed it as a routine measure, and to-day, after the lapse of six years, I unhesitatingly say that of all so-called specifics it is *facile princeps*. In the three years immediately following Dr. Crowly's article I treated 59 cases of acute lobar pneumonia, not only without a death, but in nearly every case with a very speedy recovery. With a panel of over 4000, and with the exceptionally rainy and rough weather we have had from the middle of October to the beginning of March, I have had 49 cases of pneumonia. Forty-eight recovered, one died. The man who died was a chronic alcoholic, who had cirrhosis of the liver and albuminuria. Throughout the disease the symptoms of alcoholism were more prominent than those of pneumonia, and he died from alcoholic poisoning.

You throw a slight suspicion of doubt on Mr. Mathison's communiqué to the *Polyclinic* when you say the diagnosis seems to have been made on the symptoms and physical signs without the aid of bacteriology. I hope you will concede that it is quite possible to diagnose lobar pneumonia from the symptoms and physical signs alone. Unless a medical man has mistaken his profession, I think it is impossible in the very great majority of cases to miss a case of lobar pneumonia. The flushed face, the pungent skin, the short sharp painful cough, the full pulse are objects which obtrude themselves on the notice of the practitioner, even if he has left his thermometer and stethoscope at home. These signs are aggressive, whilst the pneumococcus will often successfully evade the searching eye of the trained bacteriologist. "In a study of blood and sputum cultures from 32 cases of lobar pneumonia Hastings and Boehm found blood and sputum positive bacteriologically in 11 cases."[1] In two-thirds of the cases, therefore, the bacteriological examination failed. When one considers that the mortality from pneumonia is given in text-books as ranging between 15 and 40 per cent., and that men and women in the very prime of life are cut down, one must painfully realise the stolid conservatism of the profession in neglecting a specific when that specific is not the outcome of the bacteriological laboratory. In the treatment of my cases I have relied only on ordinary home nursing, such as the wife, mother, or sister, or any other good Samaritan proffered. Trained nursing was never required.

In conclusion, permit me to quote Dr. Crowly's words. "If everyone who read about this treatment had nine equally successful cases, Dr. Ewart would deserve well of these sufferers, and in justice to the latter, who are so numerous, I would suggest its trial by others."

I am, Sir, yours faithfully,

Exeter, June 30th, 1915. J. A. W. PEREIRA.

STOMACH *V.* HEART IN RELATION TO PRÆCORDIAL PAIN AND SUDDEN DEATH.

To the Editor of THE LANCET.

SIR,—The symptoms of the case described by Dr. C. J. S. Hancock under "Clinical Notes" in THE LANCET of June 19th have a truly Heberden ring. "Those who are affected with it" (the angina pectoris), writes Heberden in his Commentaries, "are seized while they are walking, more particularly if it be up-hill and *soon after eating*, with a painful and most disagreeable sensation in the chest which seems as if it would extinguish life if it were to increase or to continue, but the moment they stand still all this uneasiness vanishes." In the cases referred to by Heberden, in the case described by Dr. Hancock, and in the one appearing above my name in THE LANCET of April 3rd, the association of the full stomach with the seizure is manifested. In three cases of the angina pectoris under my notice an X ray examination disclosed the presence of a contractile stomach

[1] Stitt: Practical Bacteriology, Blood Work, and Parasitology, p. 58.

intolerant in the entertainment of food and gas, and the intolerance was increased by exercise. When an intolerant stomach contains food or gas a condition favourable to an attack is in being. A viscero-parietal reflex is induced by exercise, and in presence of a hyper-irritable state of segmentary centres symptoms of the seizure appear. As Dr. Hancock suggests, the seizure is a reflex phenomenon. It is relieved when intragastric pressure again falls, which occurs when walking ceases or when gas is expelled in quantity from the stomach either per os or through the pylorus.

Certain correspondents writing privately have asked me what is meant by a segmentary neurosis. This term I shall now endeavour to explain. According to my conception, the neurosis is such as that which appears in paroxysmal spasmodic disorders affecting the musculature of visceral cavities. Hyper-irritability of the central nervous system which arises in the course of difficult and prolonged labour furnishes an illustration in point. During parturition after a normal physiological fashion a contractile wave beginning in uterine muscle is continued in parietal and periods of dual contraction separated by intervals of time follow one another until the fœtus is expelled. Even if the upper set of motor neurons be divided the same phenomenon occurs. It is obvious that zonal reflex connexions between visceral and parietal sheets of muscle exist.

If parturition be difficult and prolonged a new set of symptoms comes into the field, parietal muscle hardens, tender spots and patches appear on the thighs, the vaginal mucous flux ceases, parts exude a scanty sticky secretion, blood pressure rises, pain referred to the back and femoral regions agonises the subject, and cramp of the lower extremities occurs. These phenomena I look upon as signs of establishment of the segmentary neurosis. From the advent of these additional symptoms it is gathered that the centre of the viscero-parietal reflex has become the seat of hyper-irritability, and that hyper-irritation has been propagated to other groups of neuronic cells occupying the segmentary commune. In other words, paroxysms of pain which now occur are paroxysms of uterine angina.

To pursue the comparison further. Certain stimuli excite premature labour in the case of the uterus innervated by sound centres. Stimuli of the same category have a similar effect when uterine centres are in a state of hyper-irritability, but centres respond now to stimulation with much more readiness than before, and activities excited thereby, although less effective through lack of coördination, are rendered abnormally aggressive through exaggeration. The proximate stimulus which excites normal premature labour consists of a sudden increase in uterine tension, usually produced by strenuous exercise, emotional disturbance, mental excitement, deep sensory impressions, and exposure to cold or other unsuitable conditions of environment. When central hyper-irritability is great, as in the case of the aborting habit, any one of these remote stimuli, even in trivial degrees of intensity, excites paroxysms.

Symptoms of the paroxysmal syndrome consist of exaggerated expressions of function of groups of neurons constituting the segmentary commune. For instance, visceral and parietal sheets of muscle engage in spasm, vaso-motor disturbance is manifested by elevation in blood pressure, secretional disorder is signalised by excessive flows of urine, and tetany of the visceral sheet of muscle asserts itself by agonising pain of the referred type.

With few changes in detail on account of divergency in contents of segmentary neuronic communes situated on different planes this statement of exciting causes and symptoms applies to a description of cases of aborting uterus, angina abdominis, and angina pectoris, and, indeed, all paroxysmal spasmodic disorders associated with the musculature of visceral tubes and cavities. In these instances alike physiological reflexes have become seats of pathological disorder.

Viscero-parietal physiological reflexes which dominate every segment of the cord serve a protective office. They invoke robust parietal muscle to assist the more delicate visceral sheet in the removal of unsuitable bodies from visceral cavities. They come into play even when unwelcome intrusion upon the visceral cavity is threatened, hence the reason why emotional stimuli as well as material have similar effects in rousing the activities of the reflex. The protective reflex is noticed in play in the primordial organism when in presence of cold or other unsuitable states of environment. Through its activities the contents of improvised stomachs are expelled. Activities of the reflex are recognised in the sea anemone when anything unsuitable gains access to the visceral cavity or impinges upon its oral processes, as when the organism is subjected to unsuitable impressions from a cold or rough sea.

When the rudimentary central nervous system has become installed, as in the case of the ascidian, it is noticed to have been constructed after a manner enabling it to keep alive this office. The single ganglion situated upon the pharyngeal wall is in touch with the flange of protoplasm which supports rings of oral processes, and from which base organisms higher in the scale evolve organs of sense and faculty. The ganglion is also in neuronic connexion with visceral and parietal sheets of primordial contractile tissue. This ganglion and its neuronic appendages furnish a mechanism by means of which visceral and parietal sheets of muscle act together in the expulsion of unsuitable bodies from visceral cavities and from the purlieu of the oral orifice. In man a similar reflex centre is lodged in segments of the cord, and when the centre is in a state of hyper-irritability a segmentary neurosis is established.

I am, Sir, yours faithfully,

H. WALTER VERDON.

Streatham Hill, S.W.

THE FRENCH RED CROSS: VACANCIES FOR MEDICAL MEN.

To the Editor of THE LANCET.

SIR,—The generous response of the profession to the appeal you were good enough to allow me make in your columns some months ago tempts me to beg again your kind assistance. A number of hospitals that formerly made their own arrangements for their surgical staffs, owing to new regulations by the authorities, have now to be supplied through the Croix Rouge Française. Vacancies now occur and will continue to do so for some months. I should, therefore, feel greatly obliged to any of my *confrères* desiring to offer their services for a month or more to the French wounded if they would write to me for application forms or any other information on this subject. If they should wish a personal interview, as I am doing this work in the intervals of practice, I must ask them to be

good enough to write to me for an appointment There are a very few paid appointments for good operators willing to go for three or more months.

In the case of American surgeons, I am instructed to say that their coöperation is heartily welcome and most valued. In order, however, that American surgery should be as worthily represented as it deserves, and in view of the fact that we have scarcely any criterion of the value of many diplomas, evidence of actual hospital appointments and surgical work done therein will be required. Surgeons who have served with the American Red Cross in other hospitals than those of our Allies are not eligible.

I am, Sir, yours faithfully,

JAMES DONELAN,
Medical Referee.

Comité de Londres, 9, Knightsbridge, Hyde Park Corner, London, S.W., July 6th, 1915.

THE INCIDENCE OF PLAGUE IN EUROPE.

To the Editor of THE LANCET.

SIR,—I gather from Mr. C. Strickland's letter in THE LANCET of June 19th that he has entirely missed the point of my letter of Dec. 19th, 1914, criticising his conclusion as to the significance of the data furnished by Martin and Rowland and the Local Government Board in connexion with epizootic plague in East Anglia.

The percentage infection figure (11 per cent.) found by Martin and Rowland in the winter of 1910 was based upon their observations in a small area where plague was known to be raging at the time among the rat population; the percentage infection figure (0·2 per cent.) found during the Local Government Board inquiry in 1911 was based upon the result of an extensive investigation over a wide area comprising over 200 parishes, only 19 of which proved to be plague-infected. If the officials in charge of the Local Government Board inquiry had devoted their attentions to finding out the percentage of infection in *known foci of disease* (as Martin and Rowland did) their results would have been strictly comparable with those of Martin and Rowland. Such was not, however, the object of their inquiry, which was designed to delimit the zone of infection, and not to find the percentage infection in any particular infected area.

I observe Mr. Strickland's attempt to involve me in a general argument with regard to his various theories, which have not been the subject of my criticism. I think it is quite obvious that my letter of Dec. 19th was strictly confined to a criticism of the misuse that he had made of the data furnished by the reports of Martin and Rowland and the Local Government Board respectively.—I am, Sir, yours faithfully,

RALPH ST. JOHN BROOKS.

County of London War Hospital, Epsom, Surrey, July 5th, 1915.

BOILED VACCINES.

To the Editor of THE LANCET.

SIR,—In looking through my notes of 50 cases of patients to whom vaccines of Staphylococci (aureus and albus) and Micrococcus catarrhalis were administered during the past two years and whose vaccines were boiled for 15 minutes, instead of being heated in the usual way to 58°–60° C., I conclude that the results have been somewhat better than those of earlier days, when I heated the vaccines to 58°–60° C.

In comparing the englobing powers of the phagocytes of ten of the old cases with ten of the recent series selected at random, I find that in eight of the latter (80 per cent.) phagocytosis is distinctly more active as measured by the number of cocci englobed.—I am, Sir, yours faithfully,

DAVID SOMMERVILLE, M.Sc., M.D. Belf.
Hon. Pathologist, Farringdon Dispensary, E.C.

July 1st, 1915.

THE EXCHANGE OF MEDICAL OFFICERS.

To the Editor of THE LANCET.

SIR,—In commenting last week on this matter you refer to the services of the military surgeon to the wounded. This aspect of the duties and responsibilities of the army medical officer is, however, only one, and that probably not the most important, though the most obvious. The care of the health of the troops, all that is understood to come under the head of sanitation, is of even greater moment. It is true that during the present war the casualties due to wounds in action have been enormous, far exceeding (in all probability) any previous records; but although statistics are not at present available to the public in regard to the health of our forces, from all that can be gathered it appears that the general sanitary conditions have been excellent. This implies an enormous amount of work and perpetual watchfulness on the part of the medical personnel and a degree of energy and perseverance hardly to be estimated. I am, Sir, yours faithfully,

A.M.S.

July 5th, 1915.

Obituary.

RICHARD CLEMENT LUCAS, M.B., B.S. LOND., F.R.C.S. ENG.,

CONSULTING SURGEON TO GUY'S HOSPITAL.

WE regret to announce the death of Mr. Richard Clement Lucas, which occurred at his country house, Oaklands, Midhurst, Sussex, on June 30th, after an illness extending over some 18 months.

Richard Clement Lucas was the son of Mr. William Lucas, of Oaklands, and was born 69 years ago. He was educated at Queenwood College and Guy's Hospital, his career as a student being extremely successful, inasmuch as in his medical examinations at the University of London he passed in the first division at each examination, obtaining honours in the examination for his surgical degree and the gold medal in the M.B. examination in 1871.

Mr. Golding-Bird, to whom we are indebted for most of the memoir which follows, writes: "If the best epitaph that can be written is 'Here lies a good man,' the next best tribute to a man's memory, when it can be truly added, is that he was useful also. Both these characteristics apply in full to Richard Clement Lucas. Debarred by an illness of many months from actively participating in professional affairs, he yet to the last retained the keenest interest in all that was going on around him; and the anxiety that he must have often felt on account of his young son serving at the front, whilst he himself lay helpless, was counterbalanced by the justifiable pride that he had a son old enough to serve his King and country at the present time."

Prior to his appointment as assistant surgeon to Guy's Hospital in 1875, and after holding, as a pupil, the highest offices obtainable at the hospital, Lucas became demonstrator of anatomy and subsequently lecturer, and soon made his mark as

a teacher who could interest as well as instruct his students, and also as a first-rate anatomist. Anatomy had always a fascination for him; he never lost his hold upon the subject; and this was, at least in large measure, the key to his masterly surgery in later years. His account of a hitherto "undescribed groove in the sphenoid" was one of the results of his powers of observation and proved the attention he paid to minute anatomical details.

In commencing surgical practice in small chambers in St. Thomas-street he found a special knowledge of ophthalmic surgery, which he had early gained, of great service, though he eventually abandoned eye-work as his field of industry grew. It is just 40 years ago that the subject of renal surgery was uppermost in surgeons' minds; and apart from the therapeutic difficulties that surrounded it, the then ungauged anatomical ones that presented themselves had a charm for Lucas. He paid for some time special attention to the surgery of the kidney, and he early achieved the success of which he was proud to his latest days, of performing for the first time, with good result, in Guy's, the removal of that organ, disorganised by calculous disease. If in later years Lucas can be said to have had a bias towards any one branch of surgery, it was towards that of the kidney, which presently loomed large in his practice, and in which he may well be remembered as a pioneer. Many of his published communications bore upon this subject.

"Years ago," writes Mr. Golding-Bird, "before the development of specialism, the term hospital surgeon was well understood and received by the laity, for it carried with it—and rightly too—from the wide experience it indicated, the stamp of surgical efficiency that enforced the confidence of all. Such a man was Lucas. Educated in the older traditions of Guy's—for he had dressed for Edward Cock—he never allowed himself to adopt one line of surgical practice to the detriment of another, and whatever in public or private practice he might be suddenly called upon to do, he was always equal to the emergency, for he had his subject at his fingers' ends.

No doubt owing to his having dressed for Cock, he was—with Durham—the great exponent at Guy's of 'Cock's perineal puncture' for insuperable urethral stricture with retention; and it would be difficult to say which of these operators was the more adept in its performance; for its success depended upon tactile delicacy, and accurate judgment of distance, combined with a steady but bold thrust of the scalpel. Certainly the writer never knew Lucas to fail in the first attempt to reach the membranous urethra; and though the operation is by now almost forgotten and supplanted, it was the means of saving much suffering and many a life when performed by such a master. As one of the highly skilled surgeons of Guy's in his day, Lucas must certainly be classed. Speaking generally, he was a bold, unhesitating, and very safe operator, in many ways reminding one of Cooper Forster, whose admirer Lucas was. He also kept himself well abreast with the times, adopted all new methods, and was a true disciple of Lister.

There was something in the man himself that was impressive. Powerfully built, with a deep voice, all his actions were calculated to inspire complete confidence. Those who knew but little of him and his work might at first well think of him as likely to prove a rough manipulator, but it required only a short experience of his methods to learn that he was in reality gentleness itself, and his concern for those under his care was as deep and sincere as could possibly be. His personal character followed the same lines: hearty—almost bluff—in expression, he was the staunchest and firmest friend one could have; and where the occasion happened that he could show practical interest in a friend's welfare, he would do so in a way that was as sincere as it was delicately undertaken. He never knowingly hurt anyone's feelings, and was straightforward in word and deed. When in debate, if he expressed an opinion of whose truth he was himself convinced, he would at times be betrayed into an impetuosity of expression that might amount to injudiciousness, but his sterling character was so well understood that none ever took offence."

In the affairs of the Royal College of Surgeons of England Lucas took an active part for some years. He was an examiner in anatomy for the Conjoint Board, as well as for the University of London. He was elected to the Council in 1901 and later served as vice-president. In 1911 he delivered the Bradshaw lecture upon various problems in heredity, in which he showed his familiarity with all the modern work upon this complex subject. This lecture was published in THE LANCET, where from time to time other of his communications appeared.

He was not a frequent writer apart from his anatomical memoranda, though his various literary communications, whether to the journals or before one of the societies, always demanded careful attention; his facts were to be relied upon and his deductions clearly drawn and convincingly maintained. A lecture on the symptoms and diagnosis of stone in the kidney, delivered before the Hunterian Society, of which body he was at one time President, illustrates well his clear way of arranging his information and his thorough manner of dealing with it (THE LANCET, 1903, vol. i., p. 1143).

A bachelor till late in life, Richard Clement Lucas devoted most of his time to his profession, carrying on an extensive surgical practice in addition to his public duties. But coming from a home in the country, he kept up always his love for country life, and he was valued highly by the students of Guy's as an active and interested president of their various sports clubs. He both shot and rode to hounds, and to these sports he may have owed his great powers of recuperation which he displayed on the occasion of the many severe illnesses which from time to time broke the continuity of his work, but which never left him in any way an invalid; he always returned to his duties as though from a holiday, for he was a man of happy and optimistic temperament. And this is true even when, in the prime of life, he went through a severe attack of typhoid fever, though he then came back to his professional life with a head of hair prematurely as white as snow, so severely had the disease affected him. His relaxations in town were reading, especially translations of the old classics, of which he was very fond, and whist, in which he was proficient, a whist club often meeting at his house in Wimpole-street. His house was open to his friends at any time, either for a friendly chat or for more serious conversations, and one was sure of a genuine and hearty welcome as well as of the host's undivided attention. His wife, the daughter of Surgeon-General Saville Marriott Pelly, predeceased him by a few years,

and her death deeply affected him and helped to age him more than all his illnesses had ever done; but he devoted himself to the education of his two boys, of whose doings and prospects he never wearied to talk with those who were in touch with his home life.

Sir W. Arbuthnot Lane sends us the following appreciation, which well shows the great qualities which Lucas possessed as a hospital surgeon:—

"By the death of Richard Clement Lucas the profession loses an eminent surgeon and a remarkable man. His was a distinct personality which cannot be ignored when the surgery of the late Victorian era is under review, and his name will be always associated with the early development of renal surgery, in which subject he took a continued interest. He served Guy's Hospital for nearly half a century, and devoted an enormous amount of time and energy not only to his hospital duties but to the education of the students, in every one of whom he took a great personal interest. Quite a number of his colleagues owe their success in life to the stimulus which he applied to them by his interest and advice in the early stages of their careers. He used to ask the first year's men to meet him in order that he might discuss with them collectively and individually the best course for each to pursue in his work, and few who were present at one of those talks will forget the strong impression that he made upon the young student. Full of ambition himself, and indefatigable in work, he certainly possessed a wonderful power of inducing energy in others. In his prime he was a masterly operator—bold, rapid, and certain. Nothing pleased him more than a deep and extensive dissection in the neck, in which his dexterity and anatomical knowledge had full play. In his work he was always teaching the student, and the interest of his lectures was notably enhanced by the excellent lightning sketches with which he illustrated them. He wrote a large number of papers on anatomical and surgical subjects, in many of which he displayed remarkable originality. Needless to say, a man of this calibre does not go through life without encountering much opposition. An interesting example of this is worth recording because of its surgical interest. Early in 1880, when the relations between the governors and staff of Guy's Hospital were at a considerable tension, Lucas, then an assistant surgeon, had as a patient a man who was very ill with a tuberculous kidney and a discharging sinus in the loin. Lucas proposed to remove the kidney—an operation which at that time had rarely been attempted, and never, so far as we know, successfully. The governors refused to sanction the operation, but Lucas denied their right to interfere between his patient and himself, and in the presence of the superintendent, whom the governors had deputed to represent them, he operated with complete success, the patient being shown in good health more than 20 years later."

Lucas may be said almost to have died in harness, and this is as he would himself have had it, for any enforced retirement, coupled with idleness, was foreign to his ideas. He was the embodiment of energy to the very moment that he was rendered by illness incapable of pursuing his active life, so strenuously did he occupy every hour of the day. As will be gathered from what has been said, he leaves behind him the memory of a representative surgeon and a good man.

The War.

THE CASUALTY LIST.

THE following names of medical men appear in the casualty lists published since our last issue:—

Died of wounds.—Surgeon F. H. Rees, R.N., Drake Battalion, reported wounded in our last issue. He was the son of Dr. Alfred Rees, of Cardiff.

Lieutenant W. R. Pryn, R.A.M.C., is reported as having died while serving with the Expeditionary Force.

Wounded.—Temporary Lieutenant H. Pierce, R.A.M.C.; Captain H. J. Gorrie, 3rd Highland Field Ambulance, Lieutenant-Colonel W. B. Pritchard, 2nd East Lancashire Field Ambulance, Captain W. J. Harrison, attached 6th Northumberland Fusiliers, Surgeon-Captain R. W. Branthwaite, 15th London Regiment (Civil Service Rifles), all of the R.A.M.C. (T.F.).

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men are to be added to our lists of those who have fallen during the war:—Second Lieutenant F. Chilton, only son of Dr. Charles Chilton, professor of biology, Canterbury College, Christchurch, N.Z.; Lieutenant W. A. Leland, eldest son of Dr. A. Leland, of Kensington; Second Lieutenant A. D. Pank, youngest son of Lieutenant-Colonel P. D. Pank, Bengal M.S. (retired); Corporal G. B. Warde, Canadian Forces, eldest son of Dr. Warde, of Tunbridge Wells; Mr. P. S. Warren, eldest son of Dr. W. Warren, late of Melbourne; Lance-Corporal Eric Pollard, younger son of Dr. J. Ellery Pollard, Acocks Green, Birmingham; Second Lieutenant C. H. D. Banks, eldest son of Dr. Charles Banks, of Calcutta; Captain C. G. Bramwell, only son of Dr. J. W. Bramwell, of Kenton, Devon; Captain A. C. Hamilton, elder son of Dr. J. R. Hamilton, of Hawick. Mr. C. C. Malpas, R.N.D., younger son of Dr. Douglas D. Malpas, of Wimbledon, died on March 10th from the effects of cerebrospinal meningitis.

THE HONOURS LIST.

The Distinguished Service Order has been conferred on the following medical officers:—

Major Eugene Joseph O'Neill, New Zealand Medical Corps.

On April 25th and 26th, 1915, during operations near Gaba Tepe, for exceptionally good service and exhibiting initiative and resource in command of a bearer subdivision.

Captain Arthur Graham Butler, Australian Army Medical Corps (attached 9th Australian Infantry Battalion).

During operations in the neighbourhood of Gaba Tepe on April 25th, 1915, and subsequent dates, for conspicuous gallantry and devotion to duty in attending wounded under heavy fire, continuously displaying courage of a high order.

The Military Cross has been awarded to the following medical officers:—

Temporary Lieutenant John Marchbank Gillespie, R.A.M.C.

On May 24th and 25th, 1915, at Ypres, he displayed conspicuous gallantry in ministering to the wounded under fire. He traversed the ground many times while under heavy shell and rifle fire, and dressed the wounded in the open. On the night of May 25th he went up to a

wood near Bellegarde Farm and searched for wounded men close up to the German trenches. In every action his gallantry has been conspicuous.

Temporary Lieutenant John Hart McNichol, R.A.M.C.

On May 24th and 25th, 1915, at Ypres, with untiring energy and gallantry attended to wounded men under heavy rifle and shell fire, saving the lives of many men. On the night of May 25th he searched a wood near Bellegarde for the wounded, attended to them, and had them brought in. This wood was close up to the German trenches. He has shown the greatest courage in attending to the wounded in action.

Assistant Surgeon Edwin Bunkall Messinier, Indian Subordinate Medical Department.

For consistent good work, gallant conduct, and devotion to duty when X Battery, Royal Horse Artillery, was in action, on May 9th and 10th, 1915. He went under shell fire to assist the wounded and, although twice wounded, continued to perform his duties after having his wounds dressed.

We have not always been able to give the precise account of the services for which the awards have been made, but we do so whenever practicable.

MILITARY MEDICAL OFFICER PRISONERS RELEASED.

The following is the list of medical officers of the Navy and Army who have been released and returned to England: Captain M. P. Leahy (wounded and admitted to Queen Alexandra's Military Hospital, Millbank), Captain W. K. Beaman, Lieutenant A. J. Brown (S.R.), Major J. H. Brunskill, Lieutenant P. P. Butler, Captain R. J. Cahill, Lieutenant-Colonel P. H. Collingwood, Captain D. M. Corbett, Captain W. P. Croker, Captain W. Crymble (S.R.), Lieutenant E. Davies (S.R.), Captain P. C. T. Davy, Captain R. V. Dolbey, Captain W. Egan, Captain P. G. M. Elvery, Major J. C. Furness (S.R.), Captain A. E. G. Fraser, Captain F. J. Garland, Lieutenant J. M. Gillispie, Staff-Surgeon L. L. Greig (Royal Navy), Captain W. M. Hart (Canadian Army Medical Corps), Lieutenant J. R. Hayman (S.R.), Captain J. E. Hepper, Lieutenant H. W. Hills (S.R.), Lieutenant J. L. Jackson, Captain B. Johnson, Major H. B. Kelly, Major H. W. Long, Captain J. P. Lynch, Captain A. A. Meaden, Captain E. M. Middleton, Captain W. Mitchell, Captain A. D. O'Carroll, Captain H. M. J. Perry, Captain A. M. Pollard, Lieutenant A. Preston (S.R.), Captain H. G. Robertson, Captain A. M. Rose, Captain L. M. Routh (S.R.), Lieutenant J. A. Stenhouse (T.F.), Captain G. H. Stevenson, Lieutenant-Colonel A. G. Thompson, Captain W. I. Thompson, and Captain H. G. Winter.

INTERNED BRITISH SURGEONS.

A report has been received by the Foreign Office through the American Ambassador of a visit paid by Mr. Jackson, of the American Embassy, Berlin, to the prisoners of war interned at Danholm, who include 27 British officers, of whom two, Lieutenant J. M. Stenhouse and Lieutenant C. H. Hart, belong to the Royal Army Medical Corps. Mr. Jackson reports as follows:—

I talked freely with all of them, out of hearing of any German. The British officers live by themselves, occupying two good-sized rooms, nine in one and 18 in the other, there being also one French officer in the larger room, which is partitioned off by wardrobes into three sections. All seemed well and in good spirits, and all were in communication with their friends at home. All agreed in saying that there was no discrimination against them, and none had any material complaint to make. Letters and parcels are received more promptly than they had been at Mainz. The commandant promised to consider their wishes in regard to the use of a special field for cricket. Tennis courts are already in use, and there is a large park in which the officers are permitted to walk.

THE FRENCH RED CROSS.

We publish this week a letter from Dr. James Donelan, the medical referee of the English Committee of the Croix Rouge Française, asking medical men who desire to offer their services for a short period to the succour of the wounded in France to communicate with him on the matter. The work of the French Red Cross has been extremely good in many directions, and we are glad to know that the British efforts to supplement that work have been very successful. The French Croix Rouge from the start has made itself responsible for the medical and nursing arrangements in hospitals aggregating some 100,000 beds and at an earlier stage in the war only about 30 of these were applying for surgeons to the English Committee. Of late, however, a wider range of appeal has been made, for hospitals established by various organisations in France or by private charity have since sprung up and are looking to the Croix Rouge for support. The English Committee of the Croix Rouge have placed in various temporary positions already some 200 medical men, and it should be added, for the satisfaction of those who may think of applying for an appointment, that an understanding has been reached with the War Office by which every new British surgeon sent out to France replaces a British surgeon who is returning to this country, so that the supply of British doctors for possible national needs is not being diminished because the demand for their assistance has become more widespread from the Croix Rouge. We hope, therefore, that Dr. Donelan will receive promptly some offers of assistance.

THE AMERICAN WOMEN'S WAR HOSPITAL, PAIGNTON.

We have received the analysed report of the first 1000 cases treated at this hospital, which, it will be remembered, was established as a fully equipped surgical hospital with 15 wards, having a total capacity of 250 beds. It is worked by the two units of the American National Red Cross Society detailed for service in Great Britain, Lady Paget being President, the Duchess of Marlborough chairman, Sir William Osler consulting physician, and Lieutenant-Colonel R. C. Gunning, R.A.M.C., Military Commandant. The American Red Cross staff consists of nine surgeons, with a pathologist and physician. The cases are analysed under the following nine heads:—

1. *Type of injury.*—Of 445 wounded: perforating wounds (shrapnel, gunshot) 41·2 per cent., non-perforating (shrapnel, gunshot, shell, grenade) 59 per cent., incised (bayonet) 0·6 per cent. Of the total of 445 wounded men, 9·6 per cent. had more than one wound. There were 75 miscellaneous injuries (burns, contusions, dislocations, sprains, and the like).

2. *Complications of wounds* include infections 254 (there were no gas bacillus infections and the two tetanus cases recovered), synovitis 12, aneurysm 1, hæmothorax 12, neuritis 5, phlebitis 1, miscellaneous 10. Retained foreign bodies 60 (with 51 operations for removal). Fractures: Head 10, trunk 7, upper extremity 54, lower extremity 44.

3. *Location of injuries* (excluding fractures): Head 64, neck 8, trunk 122, upper extremity 132, lower extremity 241, external genitals 3, central and peripheral nerve injuries 11, circulatory 1.

4. The *total non-traumatic surgical conditions* were 265.

5. *Operations* (under general anæsthesia) before admission 58, after admission 121.

6. *Medical conditions:* Infections 60, the most frequent being endocarditis, dysentery, rheumatic fever; non-infections 147, the most frequent being bronchitis, myalgia, debility, pleurisy, and enteritis; non-traumatic diseases of the eye 9, diseases of the skin 18. Venereal diseases were: primary syphilis 4, gonorrhœa 6, and 7 miscellaneous diseases of the genito-urinary system.

7. *The results of treatment* were as follows: Cured 623 (surgical 494, medical 129), improved 345 (surgical 276, medical 69), unimproved 29 (surgical 13, medical 16), and died 3 (surgical 2, medical 1). Of the 86 medical conditions complicating surgical cases, 57 were cured, 26 improved, 3 unimproved, and no deaths.

8. Of the *time that elapsed between injury and first field dressing* in 318 determined cases, in 89 cases the dressing was immediate, in 4 cases 72 hours elapsed, 20 were dressed within 15 minutes, 28 within 30 minutes, 35 within an hour, 35 within 2 hours, 23 within 3 hours, and the remainder at longer varying intervals. The average time of first aid in 318 cases was 6·53 hours.

9. *The average total time from duty* in 1000 cases was 22·8 days. The total number invalided out of the service was 35.

The report is an illuminating record of successful work.

THE WAR LIBRARY.—The War Library was organised at the beginning of the war to supply books and magazines to the sick and wounded in hospitals at home and abroad, and to sailors on active service. The need for such an organisation is shown by the requests for books which have become more urgent and more numerous as time goes on. Since August, 1914, books have been supplied to 808 hospitals, hospital ships, mine-layers, and Naval Brigade guards, guardships, mine-sweepers, and lighthouses; a book has been sent to every man in the North Sea Fleet, and to 77 hospitals in France. Numerous requests from English Consuls in France, water ambulances, and convalescent homes have also been satisfied. Hospitals in Malta, Egypt, and Serbia have been supplied with large consignments. Hospitals and convalescent homes all over the United Kingdom have been liberally supplied with books and magazines. The books have been sent as gifts; all carriage charges have been paid. The number of books and periodicals sent out now considerably exceeds 300,000.

Although most of the work of the War Library is carried on by voluntary help, yet the expenses of carriage, packing, stationery, and correspondence are necessarily very heavy. But the need of the navy and army of books and magazines is ever increasing, and we bring the request of the organisers for both money and clean books and magazines urgently before our readers. Money is wanted for the large and inevitable expenses of carrying on the work. The books especially asked for are small cheap editions of popular authors, and they, as well as any magazines sent, should be clean and perfect and should bear preferably this year's date.

Contributions, whether in the form of money or books, should be sent to the Secretary, War Library, Surrey House, Marble Arch, London, W. Cheques should be crossed "London County and Westminster Bank, Edgware Road Branch," and be made payable to the Hon. Treasurer, War Library.

Applications for books and magazines from hospitals and convalescent homes should be sent to the same address, when the number of beds in the institution should be stated.

QUEEN MARY'S CONVALESCENT AUXILIARY HOSPITALS.—These hospitals are established at Roehampton House, London, S.W., under the patronage of the Queen and Queen Alexandra, and are recognised by the Directors-General of the Navy and Army Medical Services as base convalescent auxiliary hospitals for amputations and special orthopædic cases. The sufferers, either as in- or out-patients, can have their artificial limbs properly adjusted here under the best possible conditions and be taught how to use them. The hospitals maintain 150 beds, and if funds permit it is hoped to establish similar hospitals in Scotland and Ireland. Particulars and forms of admission can be obtained from, and subscriptions should be sent to, Mr. C. H. Kenderdine, honorary secretary and treasurer, St. Stephen's House, Westminster, S.W. The administrative committee wish to make known to all artificial limb makers in England, Scotland, and Ireland that an exhibition of artificial limbs will be opened at Roehampton House on July 20th and will remain open until July 23rd, inclusive. Firms who have not already received an invitation to exhibit, and who would like to do so, are asked to communicate with Mr. Kenderdine. A conference in connexion with the exhibition will be held at Roehampton House on Thursday, July 22nd, at 3 o'clock, when a committee of orthopædic surgeons and the Directors-General of the Navy and Army Medical Services will discuss with the manufacturers of artificial limbs the best way of supplying the needs of mutilated sailors and soldiers. Any members of the medical profession who wish to attend will be welcome. A gold and a silver medal and diplomas will be given for the best exhibits, which will be judged by a committee of English, Scotch, and Irish orthopædic surgeons.

HOW CASUALTY LISTS ARE COMPILED.—Eye-Witness present at General Headquarters, in describing the work that devolves upon the Adjutant-General's Department, says that among its duties is that of recording and reporting casualties. A proportion of soldiers and officers disappear without leaving any trace of their fate. With regard to the others, before a man's name is sent home as a casualty it is necessary to identify him absolutely and to ascertain his name, initials, regimental number and unit, and what has happened to him. This is done at the base by a small staff detached from each unit or branch of the army in the field, which is employed in checking and verifying every piece of information received from the front regarding any member of its own unit and in maintaining a complete record of all its members in the shape of a sort of life-history. Thirty copies of the casualty lists are sent home daily, amounting sometimes to 3000 sheets of typed matter. The adjutant-general's branch is also responsible for the disposal of the effects and the wills of dead men and for their verification, and for ascertaining their place of burial, in which it is much assisted by the Graves Registration Commission, a small party of gentlemen who give their time voluntarily to the work of collecting information about the dead. They also furnish the graves with wooden crosses stencilled with the names of the buried and the date of their death. Finally, a not inconsiderable portion of the staff at the base is continuously and solely employed in replying to queries about casualties.

THE ORDER OF ST. JOHN AND THE RED CROSS SOCIETY.—The Duke of Connaught, as Grand Prior of the Order of the Hospital of St. John of Jerusalem in England, and the Marquis of Lansdowne, as chairman of council of the British Red Cross Society, in acknowledging the help afforded by the *Times* Fund, which has now passed a million and a half sterling, urge that it is impossible to place a limit to the amount that will be required until a period can be placed to the duration of the war, for until the Allies are in a position to secure a lasting and honourable peace their needs will not diminish. The fact that in recent *Gazettes* Red Cross doctors, nurses, ambulance drivers, and orderlies, working under their joint committee received other recognition is pointed to as showing the appreciation in which the personnel is held by those who are best able to judge.

TYPHUS FEVER IN A GERMAN PRISON CAMP.—According to a letter received from a trustworthy source in Switzerland by the Wounded Allies Relief Committee (Sardinia House, Kingsway), the camp for prisoners of war at Soltau, Germany, is in quarantine in consequence of an epidemic of typhus fever. It is permitted to write and to send parcels to the prisoners, but they are, of course, not allowed to reply. It is added that all necessary sanitary measures have been taken to stem the epidemic.

PORTSMOUTH RELIEF FUNDS.—Since the outbreak of the war 4370 families and 12,670 individuals, dependents of service men, have been dealt with by the local war relief committee, working in coöperation with the Royal Patriotic Fund and the agents of the National Relief Fund and of the Soldiers' and Sailors' Help Society. The strong service feeling in Portsmouth has its counterpart in the strong Portsmouth feeling in the services, especially in the navy, and to this may be attributed the overcoming of many difficulties and the success of a central system for the distribution of funds, by which overlapping has been avoided. The maternity work is in the hands of a special subcommittee of ladies who visit all expectant mothers regularly and make

recommendations as to relief, &c. The problem of "war babies," which has been so much exploited in the press and exaggerated by irresponsible people, is practically non-existent. Familiarity with khaki has produced respect for the soldier, and careful inquiries from reliable resources have failed to discover even a dozen cases of the sort out of a population of 245,000.

THE ALMERIC PAGET MASSAGE CORPS.—This corps, through the generosity of Mr. Almeric Paget, M.P., and Mrs. Paget, started work with the sanction and approval of the War Office authorities immediately after the declaration of war, and its members are now working at military and Red Cross Hospitals throughout the United Kingdom. These workers, who must be British subjects, in accordance with War Office requirements, hold the certificate of the Incorporated Society of Trained Masseuses or the certificate of one of the recognised physical training colleges. The first appointments were at the principal military hospitals, Aldershot, Netley, &c., and there are now members of the corps in nearly all the military hospitals in the United Kingdom. A centre has been opened in London at 55, Portland-place, W., where officers and men on furlough can attend for treatment. The house is kindly lent by Lady Alexander Paget and is fitted with all modern appliances for medical electricity, heat, light, &c. 280 masseuses, enrolled on the corps, are at work, and 17,000 cases have been treated to date. The authorities at the War Office have opened large convalescent hospitals, to which patients are drafted from hospitals, and where massage and electrical treatments may be administered as long as necessary. The first hospital, at Eastbourne, accommodates 3000 patients. Dr. Barrie Lambert, medical officer of the corps, has been appointed by the War Office in charge of the massage and medical electrical departments in connexion with the convalescent hospitals. The honorary secretary of the corps is Miss Essex French, herself a qualified masseuse.

A NEW HOSPITAL FOR OFFICERS.—The Endsleigh Palace Hotel, Euston, N.W., which was requisitioned by the War Office a short time ago is now complete, and is ready to receive patients under the command of Major L. Haden Guest, R.A.M.C. The honorary medical staff includes Sir Rickman Godlee, Dr. W. J. Hadley, Dr. James Taylor, Mr. L. H. McGavin, Mr. A. J. Walton, Mr. A. C. Joll, Dr. J. B. Lawford, Mr. Hunter Tod, Mr. Stanley Parkes Mummery, Mr. Abraham, and Dr. G. T. Western.

INSPECTION OF MOTOR AMBULANCES BY THE QUEEN.—On July 5th Her Majesty the Queen inspected at Buckingham Palace 26 of the motor ambulance fleet constructed according to War Office specifications which are the gifts of various towns to the British Red Cross and the Order of St. John. The cars cost £420 each on the average, and their equipment and maintenance are also undertaken by the subscribers in the respective towns to the funds raised by the lady mayoresses and mayoresses for the purpose. Altogether, over 60 such cars have been provided.

AN ANGLO-BELGIAN RELIEF COMMITTEE.—Lady Lowther is president of the newly established Anglo-Belgian Committee for the Relief of Belgian Prisoners of War in Germany, at 30, Goswell-road, E.C. It is under the patronage of the Belgian Minister.

ROYAL GIFTS FOR THE WOUNDED.—The King has given £100 to the Seamen's Hospital at Greenwich, and the Queen £100 to the Red Cross and St. John Hostel for Nurses, Tavistock-square.

ROYAL NAVAL MEDICAL INFORMATION BUREAU.—A branch of this institution has been established in Alexandria, at the National Bank of Egypt, by Miss Violet Asquith, and inquiries concerning the sick and wounded of the Royal Naval Division may be directed there to the secretary. In Malta a corresponding branch has been instituted at the Royal Naval Hospital, where inquiries should be addressed to Mrs. Lawrence Smith.

GRAMOPHONES FOR THE MILITARY HOSPITALS.—Few sources of entertainment cause so much general pleasure to our wounded sailors and soldiers, and a general appeal for gifts thereof is made by Mr. L. H. M. Dick, 15, Buckingham-street, Strand, W.C., who will see that they are properly distributed to the hospitals containing wounded.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At the examinations for medical and surgical degrees, held recently, the following candidates were successful:—

FIRST EXAMINATION.

Part I., Chemistry.—**J. A. P. Shaw**, Trinity.

Part II., Physics, and Part III., Elementary Biology.—**B. H. Cole**, B.A., H. Selwyn; and **J. A. Shaw**, Trinity.

SECOND EXAMINATION.

Part I., Human Anatomy and Physiology.—**B. F. Armitage**, B.A., St. John's; **C. C. Beney**, B.A., Jesus; **W. L. Berry**, Caius; **P. A. Buxton**, B.A., Trinity; **A. J. Copeland** and **H. Corsi**, Pembroke; **B. V. Edwards**, Trinity; **T. Fernandez**, Catharine; **H. D. Gardner**, B.A., Trinity; **S. V. Goldberg**, B.A., Catharine; **W. N. Goldschmidt**, Pembroke; **E. F. S. Gordon**, St. John's; **F. Gray**, Caius; **N. B. de M. Greenstreet**, St. John's; **C. Griffith-Jones**, Caius; **W. E. Heath**, Queens'; **S. L. Higgs**, St. John's; **H. W. H. Holmes**, Christ's; **H. B. Jackson**, M.A., Clare; **R. B. P. Lansdown**, Pembroke; **P. T. Liang**, Caius; **G. T. Lipshytz**, Emmanuel; **P. C. Livingston**, Jesus; **E. E. Llewellyn**, Christ's; **N. J. Macdonald**, Pembroke; **J. H. E. Moore**, and **H. Morrison**, Caius; **J. W. McK. Nicholl**, Queens'; **F. C. Odling**, Clare; **S. W. Page**, Emmanuel; **A. H. Pearce**, B.A., Clare; **A. V. Pegge**, Caius; **A. A. Prichard**, B.A., Clare; **H. E. Rhodes**, B.A., and **S. Riddiough**, B.A., King's; **N. Rumboll**, Emmanuel; **A. H. J. Smart**, Caius; **H. G. Taylor**, Trinity; **D. L. Tucker**, Caius; **E. B. Verney**, Downing; **M. D. Vint**, Christ's; **Y. S. Wan** and **A. T. Westlake**, St. John's; **J. Whittingdale**, Downing; and **M. Wong**, St. John's.

Part II., Pharmacology and General Pathology.—**E. V. Beale**, King's; **J. J. O. Beven**, M.A., Christ's; **H. R. Bickerton** and **G. E. Birkett**, Trinity Hall; **J. T. Bleasdell**, B.A., **H. Selwyn**; **C. N. Carter**, B.A., Trinity; **P. D. Chapman**, B.A., Sidney Sussex; **H. L. Cronk**, B.A., Jesus; **H. T. Cubbon**, St. John's; **I. de B. Daly**, B.A., Caius; **W. L. Dandridge**, Emmanuel; **F. N. V. Dyer**, Clare; **H. W. Eddison**, B.A., Christ's; **R. French** and **H. H. Ginsburg**, Downing; **E. O. Goldsmith**, B.A., Pembroke; **G. A. Goolden**, B.A., Caius; **E. H. V. Hensley**, B.A., King's; **L. G. Higgins**, Clare; **J. M. Higginton**, St. John's; **S. M. M. Jabir**, Catharine; **B. E. Jerwood**, B.A., Sidney Sussex; **S. H. M. Johns**, B.A., Clare; **J. B. S. Lewis**, Downing; **C. K. Mowll**, B.A., Caius; **F. P. Nicholas**, B.A., Jesus; **C. L. Odam**, B.A., Sidney Sussex; **C. J. Penny**, B.A., Jesus; **P. R. O'R. Phillips**, Pembroke; **S. R. Prall**, B.A., Emmanuel; **G. W. Pratt**, B.A., St. John's; **M. K. Robertson**, B.A., Trinity; **Lewis W. Shelley**, B.A., Caius; **H. J. R. Surrage**, Pembroke; **M. B. R. Swann** and **O. S. Thompson**, Caius; **W. G. Verniquet**, B.A., Emmanuel; **H. W. C. Vines**, B.A., Christ's; **R. S. Woods**, B.A., Downing; and **W. G. Woolrich**, St. John's.

THIRD EXAMINATION.

Part I., Surgery and Midwifery.—**E. D. Adrian**, M.A., Trinity; **G. L. Attwater**, M.A., Pembroke; **F. H. Brice Smith**, B.A., St. John's; **H. Gardiner Hill**, B.A., and **H. W. Hales**, B.A., Pembroke; **W. Hillbrook**, B.A., Emmanuel; **R. W. P. Jackson**, B.A., Clare; **P. K. Liang**, B.A., Caius; **R. A. Mansell**, B.A., Emmanuel; **W. H. Marshall**, B.A., Pembroke; **C. F. Pedley**, B.A., Jesus; **R. A. Peters**, M.A., Caius; **R. A. W. Procter**, B.A., Clare; **W. G. A. Schüddekopf**, B.A., Emmanuel; **W. J. D. Smyth**, M.A., Pembroke; and **G. R. S. Thomas**, B.A., Downing.

Part II.—**E. D. Adrian**, M.A., Trinity; **F. H. Brice Smith**, B.A., St. John's; **H. Gardiner Hill**, B.A., Pembroke; **W. Hillbrook**, B.A., Emmanuel; **T. J. H. Hoskin**, B.A., Trinity; **L. M. Ingle**, B.A., King's; **R. W. P. Jackson**, B.A., Clare; **R. A Mansell**, B.A., Emmanuel; **W. H. Marshall**, B.A., Pembroke; **W. New**, B.A., Downing; **R. A. Peters**, M.A., Caius; **C. M. Ryley**, Emmanuel; and **G. R. S. Thomas**, B.A., Downing.

VICTORIA UNIVERSITY OF MANCHESTER.—At examinations held recently the following candidates were successful:—

FINAL M.B. AND CH.B. EXAMINATION.

J. S. Chorlton, **A. T. Gibb**, **Edgar Granger**, *†**H. M. von Mengershausen**, **John Rigby**, **H. H. Stones**, *†**Frank Vause**, and *Richard Willan.

Medicine.—**William Halliwell.**

Forensic Medicine and Toxicology.—**J. H. Albinson**, **H. W. Bennett**, **William Christopher**, **Richard Colley**, **E. W. Fish**, **E. R. Gilmore**, **Eva L. Glasier**, **Geoffrey Lapage**, **B. L. Lloyd**, **R. L. Newell**, **F. C. Ormerod**, **Nesta H. Perry**, **Dorothy Potts**, **C. R. Sandiford**, **Walter Stansfield**, and **G. B. Wild.**

* Second-class honours.

† Distinctions in surgery and in medicine.

THIRD M.B. AND CH.B. EXAMINATION.

Pharmacology and Therapeutics and Hygiene.—**F. H. Anderson**, **F. E. Archer**, **W. T. G. Boul**, **Hilda K. Brade**, **Frances G. Bullough**, **C. F. J. Carruthers**, **Kathleen L. Cass**, **Ruth E. Conway**, **W. C. C. Easton**, **Jacob Holker**, **Norman Kletz**, **E. N. P. Martland**, **R. S. Paterson**, **A. B. Platt**, **Elizabeth C. Powell**, **Jacob Schlosberg**, **D. M. Sutherland**, **Harry Taylor**, and **Harry Tomlinson.**

Hygiene.—**J. C. T. Fiddes.**

FIRST M.B. AND CH.B., PART III.

Organic Chemistry and Bio-Chemistry.—**Mary E. Boullen**, **G. H. Buckley**, **T. H. S. Bullough**, **T. E. Coope**, **George Cumming**, **Kathleen Doyle**, **Georgiana M. Duthie**, **Olive M. Gimson**, **Archibald Harris**, **F. C. Jones**, **Simon Kelly**, **J. N. Laing**, **Peter McCormick**, **J. A. Marriott**, **W. E. Mason**, **P. B. Mumford**, **J. G. Nolan**, **E. R. Ormerod**, **Olga M. Payne**, **H. D. Preston**, **Efime Ratner**, **William Reikan**, **A. H. Sadek**, **Harry Stafford**, **Doris M. R. Tompkin**, and **Ruth A. Wilson.**

As Part of the Intermediate B.Sc. Examination.—**L. E. Benson** and **Bernard Mills.**

Diploma in Dentistry (Final Examination).—Amos Brookes, Arthur Duffy, Austin Furniss, George Furniss, H. J. F. Green, H. L. Howorth, Eunice W. Hughes, P. J. Kieran, W. K. Lever, J. E. Magraw, Herant Papazian, W. H. D. Quinn, Jessie Ramsden, and N. H. Wood.

UNIVERSITY OF BRISTOL.—At examinations held recently the following candidates were successful:—

First Examination for the Degrees of M.B., Ch.B.—Hilda Mary Brown, John Rukin Duerden, Arthur James Keevill, Thomas Henry Algernon Pinniger, and Marjorie Smith Neville.

First Examination for the Degree of B.D.S.—Doris Breta Milton (in zoology, completing examination) and George Norman Season.

First Examination for the Diploma in Dental Surgery.—Joseph Leo Delicati, Cecil Frank Long, and William Holder Shipway.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At the recent dental examinations, just concluded, the following candidates passed the First Dental Examination:—

Alexander Miller, Caithness; John McCurdy, Co. Antrim; William Morse Criswold, Chicago, U.S.A.; Ernest Purves Thomson, Edinburgh; Ralph Lawson Keith Common, Stirling; James Gould, Edinburgh; Leonard Walter Blazey, London; Norman Lewis Mill, Edinburgh; Frederick William Holmes, Newcastle-on-Tyne, and Alfred McCamblay passed in the subject of Chemistry and Physics

The following candidates passed the Final Examination and were granted the diploma L.D.S., R.C.S. Edin.:—

Bridget Honan, Cork; Andrew Robertson Menzies, Brisbane; Eric Fismer, Cape Town; Frederic Emile Gillieron, Folkestone; Maurice Andrew White, Edinburgh; John Mirtle Redpath, Edinburgh; James Haddow Smith, Edinburgh; James Virgil Reynolds Rohan, Mauritius; Douglas Campbell Noble, Coldingham, and Henry Cecil Mackenzie Morgan in Medicine and Surgery.

UNIVERSITY OF LONDON.—In the Faculty of Medical Sciences the following awards have been made: Bucknill Scholarship to B. Rosenstein; Epsom Scholarship to H. E. Beasley; Medical Entrance Exhibitions to H. N. F. Cook and A. W. Holgate.

ROYAL SOCIETY OF MEDICINE: HONORARY FELLOWS.—The following is the complete list of the recently elected Honorary Fellows of the Society:—Sir R. Douglas Powell, Bart., K.C.V.O., Lord Moulton, P.C., F.R.S., Sir John McFadyean, Sir Francis Darwin, F.R.S., Dr. Robert Bridges, Lieutenant-Colonel Sir David Prain, C.M.G., C.I.E., I.M.S., Dr. T. Pridgin Teale, F.R.S., Sir John Williams, G.C.V.O., Professor E. G. Browne, and Professor S. G. Shattock. Professor J. Babinski, Professor A. Chauffard, Professor Jules Dejerine, Professor M. T. Tuffier (Paris), and Professor Paul Heger (Belgium).

ROYAL COLLEGE OF SURGEONS OF ENGLAND: ELECTION TO THE COUNCIL.—A meeting of the Fellows of the College was held at the College, Lincoln's Inn-fields, on Thursday, July 1st, for the purpose of electing five members of Council. The Senior Vice-President, Sir Frederic Eve, presided. The result of the poll was as follows:—

	Votes.	Plumpers.
Charles Ryall	449	34
Charters J. Symonds	443	24
Herbert F. Waterhouse	317	22
F. F. Burghard	301	3
Walter G. Spencer	300	11
J. B. Lawford	264	19
T. H. Openshaw...	249	26
H. Betham Robinson	196	3
P. Macleod Yearsley...	80	2

The Vice-President declared that Mr. Ryall and Mr. Symonds were re-elected, and that Mr. Waterhouse, Mr. Burghard, and Mr. Spencer were elected members of the Council. There were 768 Fellows who voted by post and 9 voted in person. Four votes were lost as incorrectly recorded, and 6 voting papers arrived too late. Mr. H. J. Price and Mr. Willmott Evans acted as scrutineers.

THE LATE DR. JOHN JONES, OF ILFRACOMBE.—At a recent meeting of the Ilfracombe Urban Council an oil painting of the late Dr. John Jones was presented to the town, and this will be hung in the town-hall. Dr. Jones was elected a member of the first board of health which was formed in 1851, and he was the chairman of that body from 1859 to 1866.

Messrs. Edward Cook and Co., Limited, Bow, London, have offered 4000 5*s.* vouchers at 4*s.* 6*d.* each to give the new War Loan, as they expressively put it, a "kick off," and they report to us that their results so far have been very satisfactory. The offer extends only to their employees and the wives of employees serving with the colours. This is a piece of practical patriotism which might well secure imitators.

UNIVERSITY OF OXFORD.—On June 24th the degree of M.A., *hon. causâ*, was conferred upon Mr. Horatio P. Symonds, surgeon to the Radcliffe Infirmary.

Mr. C. W. Dyson Perrins, who two years ago gave £5000 towards the construction of a new chemical laboratory at Oxford University, has now given an additional £25,000 for the furtherance of instruction and research in chemistry. £20,000 of this sum will form a permanent endowment fund. Mr. Perrins's generosity has not only enriched his old University (he was a former member of Queen's College), but has also placed the nation under an obligation to him by affording much needed facilities for the prosecution of chemical research.

MOTHERCRAFT EXHIBITION.—On July 3rd, Muriel Viscountess Helmsley opened, at the Passmore Edwards Settlement, Tavistock-place, W.C., a Child Welfare and Mothercraft Exhibition which, under the auspices of the Women's Imperial Health Association, has been organised by a special committee of management, including representatives from most of the large child-welfare associations. The exhibition, with its ten independent sections, occupies the large hall of the settlement, while the drawing-room, kitchen, and library are given up to lectures and demonstrations; six of these are given daily by well-known experts in every branch of mothercraft and child-welfare work. Exhibit No. 1 consists of model rooms arranged by Miss Haddon, of the Bloomsbury Nursing Association, to represent rooms prepared for an expected confinement by a careless and careful housewife respectively. Exhibit No. 2 has been arranged by Dr. Eric Pritchard and Miss Norah Wright, of the St. Marylebone Health Society, to show the best and cheapest ways of feeding infants and children. Model meals are exhibited, as well as many articles of diet to be avoided. There is a fine collection of archaic feeding-bottles, as well as many of good and approved design. Section 3 has been arranged by the St. Pancras School for Mothers and contains many useful and ingenious devices for promoting the health of infants and children at small expense. Section 4 shows model designs of clothing for children of various ages, all extremely inexpensive and complying with hygienic requirements. Other exhibits show models of day nurseries, trestle beds, gardens, toys, &c. The fly exhibit arranged by Professor Maxwell Lefroy, Miss Norah March, and Miss Norah Wright to demonstrate how flies grow and multiply, carry disease, can be caught and killed is opportune at the present juncture. The exhibition is extremely interesting to all those engaged in child-welfare work. Nearly every exhibit demonstrated the recent advances in the new science of mothercraft. There is hardly anything shown older than 10 years which is not held up as a beacon to warn and included in the list of curiosities.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, London.

Urinary Analysis and Diagnosis by Microscopical and Chemical Examination. By Louis Heitzmann, M.D. New York. Third and enlarged edition. Price 15*s.* net.

BALE, JOHN, SONS, AND DANIELSSON, London.

A Compendium of the Pharmacopœias and Formularies (Official and Unofficial), with Practical Aids to Dispensing. By C. J. S. Thompson. Fifth edition. Price 5*s.* net.

Emergencies in Medical Practice: the Pathology and Treatment of Morbid Conditions that may Suddenly Endanger Life. By Sanitaetsrat Dr. Richard Lenzmann. Translated from third edition by R. H. S. Krohn, M.D. Lond. Price 21*s.* net.

CHURCHILL, J. AND A., London.

Diet and Disease in Infancy. By Hector Charles Cameron, M.D., F.R.C.P. Price 8*s.* 6*d.* net.

A Simple Method of Water Analysis, especially Designed for Medical Officers of Health. By John C. Thresh, M.D. Vict., D.Sc. Lond., D.P.H. Camb.. Eighth edition. Price 2*s.* 6*d.* net.

SAUNDERS, W. B., COMPANY, London.

The Origin and Nature of the Emotions. By Geo. W. Crile, M.D., Professor of Surgery, School of Medicine, Western Reserve University. Price 13*s.* net.

A Text-book of Medical Chemistry and Toxicology. New fourth edition, thoroughly revised. By Jas. W. Holland, A.M., M.D., Professor of Medical Chemistry and Toxicology, Jefferson Medical College, Philadelphia. Price 15*s.* net.

Pyelography. By W. F. Braasch, M.D., Mayo Clinic, Rochester, Minn. 323 pages. Price 21*s.* net.

SMITH, ELDER, AND CO., London.

The Valley of Fear. By A. Conan Doyle. With frontispiece by Frank Wiles. Price 6*s.*

UNIVERSITY PRESS, Cambridge.

St. Bartholomew's Hospital in Peace and War (The Rede Lecture, 1915). By Norman Moore, M.D.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Notification of Births (Extension) Bill.

Mr. LONG, the President of the Local Government Board, on Thursday, July 1st, introduced in the House of Commons a Bill "to extend the Notification of Births Act, 1907, to areas in which it has not been adopted, and to make further provision in connexion therewith for the care of mothers and young children." It was read a first time.

Casualties in Dardanelles Operations.

Mr. ASQUITH has stated in the House of Commons that the total casualties sustained by both the naval and military forces in the Dardanelles campaign up to May 31st are as follows. Officers: killed, 496; wounded, 1134; missing, 92; total 1722. Men: killed, 6927; wounded, 23,542; missing, 6445; total, 36,914. Total of all ranks, 38,636.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 23RD.

Duty on Spirits used in Hospitals.

The new clause was placed on the notice paper by the CHANCELLOR of the EXCHEQUER, but it was actually moved by Mr. BRIDGEMAN, who has taken a special interest in the subject with which it deals. In view of the expressions of opinion which have been elicited by its terms it may be reproduced *in extenso*. The clause as proposed ran: "(1) The Commissioners of Customs and Excise may authorise a person to receive spirits without payment of duty for use in the preparation in a public hospital of tinctures and other articles to be used for medical purposes in the hospital in the like manner and subject to the like conditions as they may authorise the receipt of spirits for use in art or manufacture, and Section Eight of the Finance Act, 1902, shall have effect accordingly. (2) The like allowance shall be paid in respect of spirits received for use in a public hospital as aforesaid as is payable under Section One of the Revenue Act, 1906, in respect of spirits received for use in art or manufacture, and the provisions of that section with respect to the payment of such allowance shall have effect accordingly. (3) If the treasurer or other responsible officer of a public hospital shows, to the satisfaction of the Commissioners of Customs and Excise, that any tinctures or other articles which contain spirits or in the preparation or manufacture of which spirits were used have within the preceding six months been used for medical purposes in the hospital he shall be entitled to obtain from the Commissioners repayment of such amount as he shows to their satisfaction to have been paid by way of duty in respect of the spirits contained in or used in the preparation or manufacture of the said tinctures or other articles. If any person, for the purpose of obtaining any repayment under the foregoing provision, knowingly makes any false statement or false representation he shall be liable, on summary conviction, to imprisonment for a term not exceeding six months with hard labour. (4) For the purpose of the foregoing provision the expression 'public hospital' means a hospital supported by any public authority, or wholly or partly out of any public or charitable funds or by voluntary subscriptions."

Mr. BRIDGMAN, in proposing the new clause, mentioned that hospitals made use of a large amount of spirits in the preparation of medicines, and the duty paid on those spirits came to a considerable amount. For instance, in the case of the London Hospital last year 495 gallons of rectified spirits were used, at a cost of £256. Of that sum £229 represented the duty.

Mr. GLYN-JONES, who had given notice of several amendments to the proposed new clause, pointed out that its object was not to get rid of any new burdens which had been placed on hospitals as the result of any financial measure of this year. The last thing that the medical profession would wish to do was to place any obstacle in the way of assisting hospitals, but it was felt that there were certain difficulties about the clause. What was to fall within the definition of a hospital? He thought that it would be possible to bring within the scope of the definition proposed in the clause institutions which were run by unqualified persons, provided they obtained voluntary subscriptions. It might be possible to bring nursing homes which were run for a profit under the wide definition proposed. "A hospital supported by any public authority" would include a workhouse infirmary. A circular had been issued by the British Medical Association and the Pharmaceutical Society in which certain considerations were urged. If the duty were relaxed preparations largely consisting of alcohol would be more freely used in hospitals than now. It would be unfortunate to encourage alcoholic preparations. It would be unfortunate if students during their medical course were trained to use preparations containing duty-free alcohol. They would be encouraged thus in their practice afterwards to use alcoholic preparations, but in this case the duty would have to be paid. In particular, the possible effect of such free prescribing of alcohol on the Drug Fund under the National Insurance Act should be considered. The proposal of the clause was not as easy as it appeared. There were these difficulties to be considered. In presence of the views expressed by a recognised body of the medical profession and a recognised body of the pharmacists, he would appeal to the Chancellor of the Exchequer to postpone this clause. If it was desired to give relief to the hospitals, let it be done in some different way.

Sir HENRY CRAIK supported the principle of the clause, but suggested that alterations should be made to meet objections.

Mr. MCKENNA (the Chancellor of the Exchequer) said that if the clause was seriously opposed the Government would not proceed with it, but he thought that it was eminently a matter for discussion.

After some discussion Mr. BRIDGEMAN withdrew the proposed new clause, but intimated that it would be brought up on the report stage of the Bill.

WEDNESDAY, JUNE 30TH.

Prescribing for Panel Patients.

Mr. SNOWDEN asked the honourable Member for Lincoln, as representing the Insurance Commissioners, whether he was aware that the panel committee at Newcastle-on-Tyne had decided to surcharge those practitioners whose drug cost had exceeded that allocated to them under the Act a portion of the cost, with a view to making them more careful in the future; that this had been done without any consideration as to whether the excess was accounted for by the special character of cases; that the two women practitioners on the panel had been surcharged; and that the excess expenditure on drugs in these cases was owing to the special character of their panels, and could not be avoided if justice was done to the patients; and would the Insurance Commissioners take the steps necessary to stop this practice of surcharging medical practitioners in cases where it had clearly been necessary to exceed the allocated expenditure upon drugs in the interest of the patients.—Mr. C. ROBERTS replied: I am not in possession of the details of the specific cases referred to, but I would remind the honourable Member that a practitioner has a right to be heard by the panel committee of the area before that body report to the Insurance Committee, and further to appeal to the Insurance Commissioners against any decision of the Insurance Committee to impose a surcharge.

THURSDAY, JULY 1ST.

Medical Consultants at Naval Hospitals.

Sir JOHN LONSDALE asked the Secretary to the Admiralty to state the terms of the new arrangement made with medical consultants at Royal Naval Hospitals.—Mr. MACNAMARA replied: The new arrangement is that seven consultants should be given temporary commissions as Surgeons-General, with the pay and allowances of that rank, namely:—

Full pay £1300 per annum.
House allowance £70 per annum.

And two temporary commissions as Fleet-Surgeons of ten years' seniority, with the pay and allowances of that rank, namely:—

Full pay £638 15*s.* per annum.
House allowance £50 per annum.
Hospital allowance £53 per annum.

As in the case of other naval medical officers, they have been informed that their appointments will not entirely preclude their engaging in private practice, provided it is clearly understood that such practice does not interfere with the performance of their naval duties.

Sir JOHN LONSDALE: Does not the right honourable gentleman think that it would have been better if this practice had been availed of from the beginning instead of having salaries of £5000?—Mr. MACNAMARA: I cannot answer that question, but I will say that these very distinguished gentlemen acquiesced in this alteration in the most patriotic way.

Mr. WATT: Is the effect of the answer that nine men are being employed in this capacity instead of five?—Mr. MACNAMARA: No; there were seven consultants, and there were two others. We have not added to them.

The Royal Army Medical Corps.

Sir JOHN LONSDALE asked the Under Secretary for War whether certain lieutenants of the Royal Army Medical Corps Special Reserve serving in France were given to understand some months ago that their names had been noted for transfer to the Regular Royal Army Medical Corps; whether they had been gazetted accordingly, and, if not, when they might expect to be gazetted; whether their transfer on being gazetted would be antedated to the time that they were noted for the change; and whether, as the transfer was entered in some cases before the recent general

promotion of Regular Royal Army Medical Corps lieutenants to be captains, those who were noted for transfer prior to the general promotion would be included in the list for captaincy and be gazetted accordingly.—Mr. TENNANT answered: No promise of a transfer to the Regular Royal Army Medical Corps has been given, but a certain number of lieutenants of the Special Reserve and temporary lieutenants have made applications for permanent commissions in the Royal Army Medical Corps, and their requests have been noted for consideration in the event of it being decided to give direct commissions instead of in the usual way by open competition. The question of the date from which such appointments would take effect and what rank would be given would be for consideration when the matter is settled.

Antityphoid Inoculation.

Mr. CHANCELLOR asked the Under Secretary for War to state the number of cases of, and deaths from, paratyphoid fever that had occurred since the outbreak of war up to the latest date available amongst officers and men serving with the British forces in Europe; and the numbers of the cases and deaths amongst men who had been inoculated against typhoid fever and the numbers of those who had not been so inoculated.—Mr. TENNANT said in reply: In the Expeditionary Force in France there had been up to May 22nd, 1915—and I have no later figures—297 cases of paratyphoid fever with 10 deaths. There are no figures available to show in how many cases there had been inoculation against typhoid fever.

Mr. G. GREENWOOD: Is paratyphoid fever not merely another name for typhoid fever when it manifests itself in persons who ought not to have it because they have been inoculated?—Mr. TENNANT: No; I am informed it is a disease wholly distinct from typhoid fever.

Mr. CHANCELLOR asked the right honourable gentleman to state the number of cases of, and deaths from, typhoid fever that had occurred since the outbreak of war up to the latest date available amongst officers and men serving with the British forces in Europe; and also the numbers of the inoculated and non-inoculated cases and deaths.—Mr. TENNANT answered: In the Expeditionary Force in France there have been up to May 22nd, 1915, 827 cases with 128 deaths. Of these, 508 occurred amongst the uninoculated, and of these 106 died. Of the remaining 319 cases which occurred amongst the inoculated, 22 were fatal. The House will be interested to know that the ratio of attacks is 14 times and of deaths 42 times greater amongst the uninoculated men.

Mr. CHANCELLOR: Are these figures arranged over the whole period, including the period when 60 or 70 per cent. of the men were uninoculated, or is the right honourable gentleman merely dealing with the figures relating to the present day.—Mr. TENNANT: I am dealing with the figures for the whole of the campaign from the beginning of August.

Exemptions from Vaccination.

Mr. SUTTON asked the President of the Local Government Board to state the number of births registered, the number of certificates of exemption from vaccination received, the percentage of exemptions to births, and the percentage of children ultimately unvaccinated for the years 1906 to 1914, inclusive.—Mr. LONG wrote in reply: The figures are as follows:—

Year.	Number of births registered during 1 year.	Number of exemptions received during 1 year.	Percentage of exemptions to births.	Percentage of children ultimately unvaccinated.
1906	935,081	52,391	5·6	16·8
1907	918,042	57,675	6·3	20·4
1908	940,383	162,799	17·3	27·9
1909	914,472	190,689	20·9	32·3
1910	896,962	230,947	25·7	36·3
1911	881,138	248,483	28·2	38·9
1912	872,737	275,929	31·6	42·9
1913	881,890	308,235	35·0	*
1914	878,822	321,280 (approximately)	36·6 (approximately)	*

* Figures not yet available.

MONDAY, JULY 5TH.

Wounds in the War.

Mr. HUGH LAW asked the Under Secretary for War whether he could state approximately the number of men who had died in hospital as the result of abdominal wounds received in the western area of war; and what proportion such cases bore to the total number of men suffering from such wounds.—Mr. TENNANT furnished the following written reply: I am afraid that this information could not be given without asking the medical authorities in France for a return, and they are already heavily burdened.

Mr. HUGH LAW asked the right honourable gentleman whether he could give approximately the number of cases in which it had been necessary to amputate one or more limbs of men admitted to hospitals here or in France.—Mr. TENNANT wrote in reply: I understand that the Chelsea Commissioners have up to date received reports of 782 cases.

Defective Eyesight in the Army.

Colonel YATE asked the Under Secretary for War whether men were now permitted to enlist whose defects of eyesight could be corrected by glasses.—Mr. TENNANT answered: Those who wear glasses are not prevented from enlisting unless their eyesight is defective beyond a definite limit. Such men are allowed to join the army for certain definite purposes such as drill inspectors, shoeing smiths, Army Veterinary Corps, &c.

Promotion in the Royal Army Medical Corps.

Colonel YATE asked the Under Secretary for War whether, in view of the fact that in 12 field ambulances and three casualty stations now at the front, in which by the war establishment strength there should be 30 majors, there were now only two majors actually employed, and those two were doing the work of lieutenant-colonels, he would take steps to remedy the deficiency by promoting the requisite number of captains, Royal Army Medical Corps, to the rank of major.—Mr. TENNANT said, in reply: The promotion of a considerable number of captains is already under consideration.

Part-time Medical Service for the Navy.

Commander BELLAIRS asked the Secretary to the Admiralty whether the Board could see their way to give to medical men holding the position of surgeon and agent a distinctive rank, active or honorary, in view of the many duties they had to perform.—Mr. MACNAMARA wrote in reply: This question has been carefully considered, and it is not thought necessary to give these gentlemen, whose services are part-time only, distinctive rank.

TUESDAY, JULY 6TH.

Hospitals and the Spirit Duty.

Mr. KING asked the Chancellor of the Exchequer whether, in reference to the proposal to relieve hospitals from the payment of duty on alcohol used medicinally, he had consulted authorities on the temperance question as to the possible dangers of an increased use of tinctures and other forms of alcohol which must ensue if the cost of such medicines was substantially reduced.—Mr. MCKENNA answered: I have not thought it necessary to take this step, as I have no reason to suppose that the grant of the concession will lead to abuse. The effect of the proposal would be, not to relieve hospitals from the payment of duty on all spirits used medicinally—e.g., brandy—but only to exempt spirits used in the preparation of tinctures and other articles to be used for medical purposes.

Medical Officers of the Territorial Force.

Commander BELLAIRS asked the Under Secretary of War, in view of the fact that the medical branch was the only executive branch of the Territorial Force which had a regulation preventing promotion until after three years' service, whether the War Office could see their way to alter the rule so as to induce more medical men to join and as an act of justice to those who had already joined.—Mr. TENNANT wrote in reply: The question is already under consideration.

WEDNESDAY, JULY 7TH.

Dentistry for the Troops.

Sir J. D. REES asked the Under Secretary for War what arrangements were made for dentistry for the troops; whether anything like an army dental corps existed; whether the Government had its own laboratory for supplying dentures or whether it was paying the prices charged to the general public for dental materials; if so, whether the taxpayer was saddled with charges in excess of what the wholesale houses actually received from the dentists, who accounted directly to the Government; and whether due measures would be taken for the protection of the taxpayer in this behalf.—Mr. TENNANT answered: In some places there are specially appointed dental surgeons who devote their whole time to the troops. In others the work is done by selected civilian dental surgeons on terms arranged between them and the local military authorities, subject to a limit laid down by the War Office. A number of whole-time dental surgeons have received commissions, but there is no army dental corps and no need for one. The Government has no laboratory for supplying dentures, but in certain places, including France, there are dental mechanics shops for making and repairing dentures. At other places dentures are supplied by civil dentists on terms arranged locally, subject to a maximum fixed on the advice of expert dentists. The Government is getting dentures at reasonable rates and the taxpayer is carefully protected.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BOSSON, G. A., M.B. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Alford District of the county of Lincoln.

HEDDLE, R. P., M.B., C.M. Edin., D.P.H., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Kirkwall District of the county of Orkney.

LYNCH, GEORGE WILLIAM AUGUSTUS, M.B., B.C. Cantab., has been appointed a Member of the Executive Council of the Colony of Fiji.

MATTHEWS, J. NELSON, M.D. Calif., M.B., C.M. Glasg., has been appointed Resident Surgeon at the Wharncliffe War Hospital, Middlewood-road, Sheffield.

TONG, LIVSEY, M.R.C.S., L.R.C.P. Lond., has been appointed Medical Officer to the Leigh Rural District Council.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Junior House Surgeon. Salary £100 per annum, with residence, board, &c.

BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £250 per annum, with apartments, attendance, &c.

BIRMINGHAM UNIVERSITY, FACULTY OF MEDICINE.—Female Demonstrator in Anatomy for Women Students.

BOLTON INFIRMARY AND DISPENSARY.—Second House Surgeon. Salary £200 per annum, with apartments, board, and attendance.

BRADFORD CHILDREN'S HOSPITAL.—House Surgeon. Salary £120 per annum, with board, residence, and laundry.

BRIDGWATER HOSPITAL.—House Surgeon, unmarried. Salary at rate of £125 per annum, with board, lodging, and washing.

BRISTOL, COSSHAM MEMORIAL HOSPITAL, Kingswood.—House Surgeon. Salary £150 per annum, with board, residence, and laundry.

BRISTOL GENERAL HOSPITAL.—House Physician for six months. Salary at rate of £150 per annum, with board, residence, &c.

BURY INFIRMARY.—Senior and Junior House Surgeons. Salary £250 and £150 per annum respectively, with board, residence, and washing.

CARDIFF, KING EDWARD VII.'s HOSPITAL.—House Surgeon for six months. Salary at rate of £140 per annum, with board, residence, and laundry.

CHELTENHAM EDUCATION COMMITTEE.—Assistant Medical Officer of Health and Assistant School Medical Officer. Salary £300 per annum.

CHELTENHAM GENERAL HOSPITAL.—House Surgeon and House Physician, unmarried.

CHESTER COUNTY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £200 per annum, with board, lodging, and washing.

CROYDON MENTAL HOSPITAL, Upper Warlingham, Surrey.—Second Assistant Medical Officer. Salary £250 per annum, with board, lodging, and laundry.

DURHAM COUNTY HOSPITAL.—House Surgeon. Salary £150 per annum, with board and lodging.

FOLKESTONE, ROYAL VICTORIA HOSPITAL.—House Surgeon. Salary as agreed, with board, residence, and laundry.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway, N.—House Surgeon for six months. Salary as agreed, with board, residence, and laundry.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—House Surgeon. Salary £150 per annum, with board, residence, and laundry.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.—Resident Medical Officer for six months. Salary at rate of £200 per annum, with board, residence, and laundry.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.—Assistant Casualty Medical Officer and House Surgeon, unmarried, for six months. Salary £30 each, with board, residence, &c.

KENT EDUCATION COMMITTEE.—Temporary School Medical Inspector and Medical Officer of School Clinic. Salary at rate of £350 per annum, &c.

LEEDS PUBLIC DISPENSARY.—Female Resident Medical Officer. Salary £130 per annum, with board, residence, and laundry.

LIVERPOOL, MILL-ROAD INFIRMARY.—Temporary Assistant Resident Medical Officer, unmarried. Salary at rate of £300 per annum, with board, &c.

LIVERPOOL, WALTON INSTITUTION, Rice-lane, Walton.—Assistant Resident Medical Officer, unmarried. Salary at rate of £300 per annum, with board, &c.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN, 8, Hunter-street, Brunswick-square, W.C.—Female Part-time Demonstrator in Anatomy.

MACCLESFIELD GENERAL INFIRMARY.—House Surgeon. Salary £180 per annum, with board and residence.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Resident Medical Officer, unmarried, for six months. Salary at rate of £100 per annum, &c.

MANCHESTER, COUNTY ASYLUM, Prestwich.—Assistant Medical Officer, unmarried. Salary £250 per annum, with board, apartments, attendance, and washing.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road.—House Surgeon. Salary £120 per annum, with apartments and board.

MARGATE, ROYAL SEA-BATHING HOSPITAL FOR SURGICAL TUBERCULOSIS.—Resident Surgeon. Salary at rate of £150 per annum, with board, residence, and laundry. Also Female Surgeon. Salary at rate of £250 per annum.

NEWCASTLE-UPON-TYNE, UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.—Demonstrator of Anatomy. Salary £250 per annum.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Surgeon and House Physician. Salary £250 and £240 per annum respectively, each with board, residence, and washing.

PORTSMOUTH ROYAL HOSPITAL.—House Surgeon for six months. Salary £150 per annum, with board, &c.

ROCHESTER, KENT, ST. BARTHOLOMEW'S HOSPITAL.—Resident Assistant House Surgeon, unmarried, for six months. Salary at rate of £110 per annum.

ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, King William-street, West Strand, W.C.—Assistant Surgeon.

ST. MARK'S HOSPITAL FOR CANCER, FISTULA, AND OTHER DISEASES OF THE RECTUM, City-road, E.C.—House Surgeon. Salary £100 per annum, with board, lodging, and washing.

SALISBURY GENERAL INFIRMARY.—House Surgeon and Assistant House Surgeon, unmarried. Salary £150 and £100 per annum respectively, with apartments, board, lodging, and washing.

SHEFFIELD ROYAL INFIRMARY.—House Surgeon and Assistant House Physician. Salary £100 per annum, with board and residence.

SUNDERLAND ROYAL INFIRMARY.—Resident Medical Officer. Salary £150 per annum, with board, residence, and laundry.

SWANSEA GENERAL AND EYE HOSPITAL.—House Physician. Salary £200 per annum, with board, apartments, and washing.

TUNBRIDGE WELLS GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £250 per annum, with board, residence, &c.

VENTNOR, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Isle of Wight.—Assistant Resident Medical Officer.

WALSALL AND DISTRICT HOSPITAL.—Assistant House Surgeon and Anæsthetist. Salary £150 per annum, with board, residence, and laundry.

WARRINGTON INFIRMARY AND DISPENSARY.—Senior House Surgeon. Salary at rate of £200 per annum, with board, apartments, and laundry.

WEST BROMWICH AND DISTRICT HOSPITAL.—House Surgeon and Assistant House Surgeon, unmarried. Salary £150 and £120 per annum respectively, with residence, board, and laundry.

WEST END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, PARALYSIS, AND EPILEPSY, 73, Welbeck-street, W.—Clinical Assistants to Out-patients' Physicians.

WEST HAM AND EASTERN GENERAL HOSPITAL.—Resident Medical Officer. Salary £160 per annum. Also House Physicians and House Surgeons. Salary £120 and £100 per annum respectively, with board, residence, and washing.

WIGAN, ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY.—Junior House Surgeon. Salary £150 per annum, with board, apartments, and washing.

Births, Marriages, and Deaths.

BIRTHS.

COWAN.—On June 29th, at Thetford, Norfolk, the wife of Geoffrey Cowan, M.D. Cantab., of a son.

CROOK.—On June 30th, at The Goffs, Eastbourne, the wife of A. H. Crook, F.R.C.S. Eng., of a son.

FLETCHER.—On July 2nd, at Haverstock-hill, N.W., the wife of N. Corbet Fletcher, M.B., B.C. Cantab., M.R.C.S., of a daughter.

GRANT.—On June 25th, at Prince's-gate, S.W., the wife of Captain M. F. Grant, R.A.M.C., of a son.

HAROLD.—On July 2nd, at Brunswick-square, London, W.C., the wife of Dr. James Harold, of a daughter.

IRWIN.—On July 1st, 1915, at 29, University-square, Belfast, to Mr. and Mrs. S. T. Irwin, a son.

MCCULLY.—On July 5th, at New North-road, Huddersfield, the wife of Lieutenant A. L. McCully, M.B., R.A.M.C. (T.F.), of a daughter.

TAYLOR.—On June 30th, at Thorne, near Doncaster, the wife of J. M. Taylor, M.D. Glasg., of a son.

TRAYLEN.—On Saturday, July 3rd, at 291, Willesden-lane, N.W., the wife of C. Leonard Traylen, M.R.C.S. Eng., L.R.C.P. Lond., of a daughter.

WALKER.—On June 30th, the wife of Lieutenant F. D. Walker, R.A.M.C., of a son.

WRIGHT.—On July 2nd, at a Nursing Home, Wingfield-road, Trowbridge, to Dr. and Mrs. Roger Wright, a daughter.

MARRIAGES.

APPLETON—DOUGHTY.—On July 2nd, at St. John the Evangelist, Dulwich, Harry Appleton, M.R.C.S., to Violet Elsie, fifth daughter of the late Geo. Bell Doughty, M.A., of Dulwich College, and of Mrs. Doughty, of Dulwich and Sherborne.

CARMICHAEL—DODSWORTH.—On June 30th, Norman Scott Carmichael, F.R.C.P. Edin., to Clare Mary, daughter of the Rev. William W. and Mrs. Dodsworth.

FINEGAN—M'HARDY.—On July 3rd, at Crown-court Church, Covent Garden, London, Arthur Finegan (late Medical Superintendent, Co. West Meath Asylum), to Elizabeth M'Hardy, M.B.

DEATHS.

CLEMENT LUCAS.—On June 30th, at Oaklands, Midhurst, Sussex, late of 50, Wimpole-street, Richard Clement Lucas, B.S., M.B. Lond., F.R.C.S. Eng., L.R.C.P. Lond., aged 69 years.

GOFF.—On July 4th, at Dargavel, Bishopton, Renfrewshire, Bruce Goff, M.D. Glasg., aged 81 years.

TAUNTON.—On June 30th, at Clarence-square, Cheltenham, William Whitchurch Taunton, M.R.C.S., M.R.C.P., B.Sc. Lond., aged 65 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE CARAVAN CLUB.

THE annual meet of the Caravan Club took place this year at its own pitch at Manor Farm on the Great North Road, Highgate, commencing June 27th. It was hardly to be expected in the disturbed condition of the times that there should be a large attendance, and undoubtedly several well-known frequenters of the meets were debarred from attending. The club, we should add, has rendered good service to the country in being the means of placing vans at the disposal of the authorities for various patriotic purposes; in fact, about 50 vans are now in use for the accommodation of nurses, on recruiting duty, or on service in France and Flanders. The incontestable advantages of outdoor life when combined with the great economy effected, ought really to increase the general popularity of caravanning. The economy consists not only in the fact that the caravanner soon learns to dispense with many things that in a house or flat are indispensable, for in addition the obligations of social life (which, however, itself is far from being impaired or lessened) cease to be burdened by conventional requirements. Of course, caravanning may be rendered as expensive as one wishes; one motor caravan on the ground was most elaborately installed with four bunks, electric light, and a cosy living room with heating and cooking apparatus, and a quarter-deck on top like a houseboat. Others of the real gipsy variety showed what scope they afford for individual ingenuity and artistic taste. Campers on the ground completed the tale, for on this beautiful pitch belonging to the club, and situated within half an hour of Leicester-square, yet conveying the impression that it might be in a park miles from any town, members of the club have the right at any period of the year of pitching a tent or van for a mere trifle nightly. A most ingenious sanitary latrine tent, the contrivance of the secretary, Mr. Harris Stone, was on view. It consists of a four-winged partition attached to the pole of an ordinary bell-tent, thus separating the tent into quadrants. A wash-bowl, ewer, and soap-dish stand on the box which contains the whole equipment when packed up. The other compartments contain each a folding garden-chair (the centre of the seat having been removed), under which stands a galvanised pail, two other such pails with trowels and containing earth standing conveniently by. Such an outfit (consisting of three packages, a bell tent in case, three folding garden-chairs, and a small box containing all the pails, trowels, basin, ewer, soap-dish, and other equipment) would be invaluable to campers. On June 30th the club gave an open-air concert, in which several members of the Old Drury Club and the Irish Club took part. There are many persons who can testify to their complete emancipation from a state of invalidism as the result of caravanning. Those interested, whether from motives of health, economy, or pleasure, in the subject, should communicate with Mr. J. Harris Stone, M.A., honorary secretary, The Caravan Club, 28, Charing Cross-road, London, W.C.

A NORMAN VILLAGE, AN AMERICAN DOCTOR, AND THE WAR.

Dr. Henry L. Shively, of New York, has recorded recently in *American Medicine* for May some experiences of a medical man in relation to the outbreak of the European War. When the storm broke Dr. Shively was spending a few days on the coast of Normandy in a picturesque, mediæval town of a thousand inhabitants, with as many more visitors during the summer months, which (it is to be presumed as a result of the censor habit) he designates V——. It has attractive villas, a little casino, a bathing beach, a thirteenth century church, and a quaint market place, and is a favourite resort of artists; and it was there that Victor Hugo wrote his "Toilers of the Sea." The peaceful routine of social life and the season's gaiety were rudely interrupted on August 1st by the town crier, who appeared in the church square and, after a preliminary tattoo of the drum, read to the hurriedly collected and expectant crowd the proclamation of mobilisation. On applying at the *mairie* for his passports, Dr. Shively was asked by the mayor if he would be willing to replace their local medical man who had been called to the colours. As the town with several adjoining villages was thus left without any medical provision whatever, Dr. Shively agreed to do so, and was supplied with the necessary authorisation to act as a French medical man, and the local doctor, a fine type of rural Norman professional man, before his departure to the front turned over to him his professional premises and equipment. Dr. Shively thus had during two and a half months a unique opportunity to observe intimately the conditions of French life in town and country and the behaviour of the people in this national crisis. After the first hours of excitement and uncertainty, he says, no one could have failed to be impressed by the admirable spirit, the calm dignity, and heroism of both men and women, and especially by the fortitude and common sense of the latter, who saw without a tremor of fear or hysteria the departure of their husbands, sons, and brothers to meet the invaders. The paper contains many interesting professional items. He tells how the alcoholic subject of an epileptiform seizure was very successfully treated by the village midwife by a copious bleeding from the ear, a method high in popular esteem there, and how a fair visitor from Paris "naively confessed that the salpingitis from which she suffered was caused by privileges she had too generously granted her fiancé." The pension of 15 francs a month accorded by the Government to an unmarried mother for each child she personally cares for at home had led, in the case of one of his patients, to the adoption of illegitimate maternity as a career, for she lived on the *rentes* thus accruing from her seven children. Dr. Shively comments on the pastmastership of the French doctors in imparting to their medicines the attractiveness of liqueurs. With regard to the use of the metric system, he says that it soon presented no difficulties, and from his experience with it he is convinced that its general adoption would be in the interest of greater accuracy, ease, and simplicity in prescribing. Professional fees he notes as being meagre in comparison with those in America, and he says it is regularly expected that a French professional man, the village physician, lawyer, or notary, should have an independent income, so that they are nearly all *rentiers* or capitalists in a small way. Through the *Assistance médicale* the village doctor cares for the poor without charge, medicines and dressings being paid for out of the communal funds. Dr. Shively was aided in their care by "a very dirty but lovable old curé," who had been an orderly and nurse during the Franco-Prussian War and who was devoted to his poor parishioners and ever performing gentle acts of charity and generosity. There was a great scarcity of skilled nurses, no training schools having been established to replace the expelled Catholic nursing orders. A lurid sidelight on 45 years of German occupation of Alsace is thrown by his conversation with a wounded French soldier, who on the outbreak of war had escaped from his home at Mülhausen and crossing the border enlisted in the French army. He could not speak a word of French, but pathetically assured the doctor that though his only tongue was German his heart was all French. Dr. Shively also relates a story of an English lady who protested against facetious allusions to the French soldiers' red trousers, because, she said, "they covered hearts as strong and brave and true as ever beat." As a result of his talks with many Belgian refugees, from their reports, and from what he heard in other parts of France, Dr. Shively does not think the tales of brutality and cruelty have been exaggerated. The lasting impression he received from his limited experience and observations in one small nook was "that for Belgium and the invaded provinces of France at least, the ravaging of the country and the sufferings of the non-combatants have been an unprovoked and criminal outrage rather than the honourable warfare of a civilised and worthy foe."

THE PUBLIC AND THE FLY DANGER.

Miss G. L. C. Eden, honorary secretary of the National Union of Trained Nurses, 39, Great Smith-street, S.W., has forwarded for our inspection a reduced copy of a poster published by the union for the purpose of educating public opinion. The poster, which is about 3 ft. × 2 ft. and is suitable for exhibition in elementary schools, schools for mothers, out-patient departments, and so forth, deals diagrammatically with the great disease carrier, the fly, and shows the insect rising from the manure heap to settle on the milk bowl or the meat. At the bottom is the statement, "One pair produces from June to August, $1 \times 50 \times 50 \times 50 \times 100 = 12{,}500{,}000$." The price of the poster is 1*s.* 7*d.* post free. It is also published in reduced form on handbills 1*s.* 8*d.* for 50, and postcards 2*s.* for 50.

Senior Student is requested to guarantee his communication with his name and address.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Thursday, July 15th.

DERMATOLOGY (Hon. Secretaries—S. E. Dore, A. M. H. Gray): at 5 P.M.

Exhibition of Cases (at 4.30 P.M.):

Dr. G. F. Stebbing: (1) Atrophic Sclerodermia and Sclerodactylia with Nodules of Calcification about the Left Shoulder; (2) Peculiar Zoniform Nævus of the Right Upper Extremity.
Dr. H. W. Barber: Lupus Erythematosus.
Dr. H. Samuel: Two Cases of Lichen Planus in Two Sisters.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Dr. Pritchard: Bacterial Therapy Department. Mr. B. Harman and Mr. Gibb: Diseases of the Eye.
TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women. Mr. Gibb: Diseases of the Eye.
THURSDAY.—9 A.M., Dr. Bernstein: Bacterial Therapy Department. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye.
FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M. Clinical Lecture.

OXFORD OPHTHALMOLOGICAL CONGRESS, Keble College, Oxford.

THURSDAY TO SATURDAY (inclusive).

For further particulars of the above Lectures, &c., see Advertisement Pages.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. I. of 1915, which was completed with the issue of June 26th, were given in THE LANCET of July 3rd.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1915 will be ready shortly. Bound in cloth, gilt lettered, price 16*s.* carriage extra.

Cases for binding the half-year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

To be obtained on application to the Manager, accompanied by remittance.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

The rates of subscriptions, post free from THE LANCET Offices, have been reduced, and are now as follows:—

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 1 0	One Year	£1 5 0
Six Months	0 12 6	Six Months	0 14 0
Three Months	0 6 6	Three Months	0 7 0

(The rate for the United Kingdom will apply also to Medical Subordinates in India whose rates of pay, including allowances, is less than Rs.50 per month.)

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London County and Westminster Bank, Covent Garden Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied.

SOLE AGENTS FOR AMERICA—Messrs. WILLIAM WOOD AND CO., 51, Fifth Avenue, New York, U.S.A.

METEOROLOGICAL READINGS.

(Taken daily at 9.30 a.m. by Steward's Instruments.)

THE LANCET Office, July 7th, 1915.

Date.		Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
July	1	30·072	N.	...	93	67	55	55	57	Overcast
,,	2	30·240	W.	...	136	77	57	59	61	Fine
,,	3	30·204	S.W.	...	125	82	61	62	69	Fine
,,	4	29·960	S.E.	...	130	85	61	63	70	Fine
,,	5	29·942	N.W.	...	125	78	61	61	67	Fine
,,	6	29·980	W.	0·77	130	77	62	60	65	Cloudy
,,	7	29·610	S.W.	...	116	69	59	58	60	Raining

The following magazines, journals, &c., have been received:—
Medical Review, British Review, Journal of Laryngology, Rhinology, and Otology, British Journal of Children's Diseases, Practitioner, Quarterly Journal of Medicine, Therapeutic Gazette, Modern Hospital, British Dental Journal, Journal of Nervous and Mental Disease, St. Bartholomew's Hospital Journal, Malaria, British Journal of Dermatology, Mercy and Truth, Annales de Gynécologie et d'Obstétrique, British Journal of Inebriety, British Journal of Dental Science, Annales of Tropical Medicine and Parasitology.

Communications, Letters &c., have been received from—

A.—Dr. Armly Ashkenny, Basingstoke; Anglo-American Pharmaceutical Co., Croydon; Miss E. Austin, Clonakilty; American Women's War Relief Fund, Lond.; Admiralty, Secretary of.

B.—Dr. A. A. Bradburne, Manchester; Sister Bowden, Buxted; Dr. G. H. Brickett, Marseilles; Messrs. Burroughs Wellcome and Co., Lond.; Surgeon R. J. Barlee, R.N., Lond.; Messrs. Butterworth and Co., Lond.; Surgeon T. S. Bradburn, R.N., Lond.; Messrs. C. Barker and Sons, Lond.; Captain A. E. Biggam, R.A.M.C., Aldershot; Birmingham City, Accountant to the; Messrs. Burt, Boulton, and Heywood Lond.; Birmingham Medical Institute, Librarian of; Messrs. Bennett Bros., Salisbury; Bury Infirmary, Secretary of; Messrs. W. H. Bailey and Son, Lond.; *Birmingham Daily Post*, Proprietors of; Major George N. Biggs, R.A.M.C.(T.), Lond.; Dr. Byrom Bramwell, Edinburgh; Dr. R. St. J. Brooks, Epsom; Sir John Byers, Belfast; Surgeon-General Sir David Bruce, A.M.S., Lond.

C.—Mr. H. A. Collins, Croydon; Messrs. E. Cook and Co., Lond.; Messrs. J. and A. Churchill, Lond.; Lieutenant J. R. Caldwell, R.A.M.C., Calais; Messrs. A. H. Cox and Co., Brighton; Messrs. Corbyn, Stacey, and Co., Lond.; *Chester Courant*, Chester, Manager of; Mr. Bernard Cridland, Wolverhampton; Dr. A. E. Carver, Torquay; Cheltenham General Hospital, Secretary of.

D.—Messrs. W. Dawson and Sons, Lond.; Derbyshire Royal Infirmary, Derby, Secretary of; Dr. Leonard S. Dudgeon, Lond.; "Duala"; Messrs. S. Deacon and Co., Lond.; Messrs. Dale, Reynolds, and Co., Lond.; Mr. Richard J. Detleff, Falkland Islands; Mr. J. Dawson, Lond.

E.—Mr. J. Everidge, Lond.

F.—Fine Art Society's Galleries, Lond.; Mr. J. Frederick, Hayes; Nurse Firth, Sherringham; Dr. A. Mearns Fraser, Portsmouth; Dr. J. G. Forbes, Eltham.

G.—General Medical Council, Lond., Acting Registrar of; Messrs. W. Green and Son, Edinburgh; Messrs. Griffith Gardiner, Lond.; Mr. H. Gardiner, Lond.

H.—Professor Walker Hall, Bristol; Hospitals and General Contracts Co., Lond.; Fleet-Surgeon J. Falconer Hall, R.N., Gosport; H. E. B., Lond.; Professor Marcus Hartog, Lond.; Dr. W. A. Heim, Chorlton-cum-Hardy; Mr. Edward Hall, West Ealing; Mr. F. A. Hocking, Lond.; Dr. J. F. Haswell, Penrith.

I.—Islington Guardians, Lond., Clerk to the.

J.—Dr. A. C. Jordan, Lond.; J. J. W.

K.—Messrs. H. S. King and Co., Lond.; Messrs. Keith and Co., Edinburgh; Kent and Canterbury Hospital, Secretary of; Dr. M. A. Key, Southsea; Kent Education Committee, Maidstone, Secretary of; Messrs. G. Kelly and Co., Lond.; King Edward VII. Hospital, Cardiff, Secretary of; Mr. B. Knight, Lond.; Mr. C. H. Kenderdine, Lond.; Dr. M. Kiutsi, Hakodota, Japan; Mrs. Kirkwood, Nottingham.

L.—Dr. Lafforgue, France; London School of Massage, Secretary of; Messrs. H. K. Lewis and Co., Lond.; Dr. B. T. Larkam; Dr. C. E. Lea, Manchester; Dr. R. Bruce Low, Lond.; Local Government Board, Lond., Secretary of.

M.—Dr. J. L. Martin, Chelmsford; Mr. F. S. Miles, Hove; Messrs. Macmillan and Co., Lond.; Mrs. I. L. MacKay, Leven; Mr. T. McLean, Lond.; Messrs. C. Mitchell and Co., Lond.; Dr. R. McLaren, Weymouth; Dr. J. A. C. Macewen, Glasgow; Messrs. Mawson and Co., Lond.; *Midland Counties Herald*, Birmingham; Manchester Clerical, &c., Association; Dr. J. N. Matthews, Manchester; Maltine Manufacturing Co., Lond.; Dr. H. L. Murray, G.P.O., Lond.; Dr. D. D. Malpas, Wimbledon; Mr. R. M. Monson, Lond.; Dr. R. McQueen, Lond.; Captain J. F. McMillan, R.A.M.C., Raska, Serbia.

N.—Messrs. F. Newbery and Sons, Lond.; Newspaper Society, Lond., Secretary of; National Union of Trained Nurses, Lond.

O.—Dr. James Oliver, Lond.; Mr. Fred A. Oetzmann, Lond.; Lieutenant F. A. Osborn, R.A.M.C., Dover; Official Press Bureau, Secretary of; Mr. C. O'Keefe, Lond.

P.—Mr. Joseph Pereira, Exeter; Mr. C. Poole, Leicester; Messrs. Parke, Davis, and Co., Lond.; Perrier, Ltd., Chairman of; Portsmouth Borough Mental Hospital, Clerk to the; Pendyffryn Hall, Penmaenmawr, Secretary of; Post-Graduate College, Lond., Secretary of; Dr. S. G. Papadopoulos, Lond.; Mr. P. C. Perham-Taylor, Hallsham; Panel Committee for the County of London, Secretary of.

R.—Messrs. Reynolds and Branson, Leeds; Randall's Advertising Agency, Liverpool; Messrs. G. N. Read, Son, and Co., Lond.; Dr. R. J. Rowlette, Dublin; Lieutenant-Colonel O. L. Robinson, R.A.M.C., Lond.; Royal Academy of Medicine in Ireland, Dublin; Rochester and Chatham Printing Co.; Rotherham Hospital, Secretary of; Royal Portsmouth Hospital, Secretary of; Royal College of Physicians, Edinburgh, Clerk of; Royal Society of Medicine, Secretary of; Messrs. L. Rose and Co., Lond.; Royal College of Physicians of Ireland, Registrar of; Lieutenant H. Robinson, R.A.M.C., Lond.

S.—Dr. David Sommerville, Lond.; South Devon and East Cornwall Hospital, Plymouth, Secretary of; Mr. M. H. Smith, Portland; Messrs. Stephenson, Blake, and Co., Lond.; South Yorkshire Asylum, Wadsley, Clerk to the; Scientific Press, Lond., Manager of; Dr. Shepheard, Lond.; Messrs. G. Street and Co., Lond.; Scarborough Hospital and Dispensary, Secretary of; Messrs. Smith, Elder, and Co., Lond.; Dr. W. Muir Smith Eastbourne; Scotland, Registrar-General of; Mr. C. P. A. Stanaghan, Folkestone; "Senior Student," Lond.

T.—Dr. C. E. Thornton, Lond.; Temple Press Cutting Agency, Lond.; Mr. J. Thin, Edinburgh; Dr. F. E. Taylor, Lond.; Tunbridge Wells General Hospital; Trimurti Co., Lond.; Dr. Thatcher, Edinburgh.

U.—University of London, Secretary of.

V.—Victoria, University of, Manchester; Messrs. J. W. Vickers and Co., Lond.

W.—Dr. M. H. Williams, Colwall; Dr. Wyatt Wingrave, Lond.; Women's Imperial Health Association, Lond., Secretary of; Messrs. Jas. Willing Lond.; War Office, Lond., Secretary of; Rev. C. A. Williamson, Chippenham; Wharncliffe War Hospital, Sheffield; Messrs. J. Williams and Son, Bradford; Mr. E. A. Walford, Banbury.

Letters, each with enclosure, are also acknowledged from—

A.—Messrs. Allen and Hanburys, Lond.; Messrs. Adlard and Son, Lond.; Mr. H. G. L. Allford, St. Leonards-on-Sea.

B.—Dr. C. Bradford, Acock's Green; Bolton Infirmary, Secretary of; Birmingham University, Secretary of; Dr. W. Bligh, Caterham Valley; British Red Cross Society, Lond.; B. J. M.

C.—Dr. R. Craven, Wigton; Messrs. J. and A. Carter, Lond.; Messrs. Cutting and Underwood, Lond.; Cafolin Co., Lond.; Dr. W. Calwall, Belfast.

D.—Mr. F. E. H. Daunt, Lond.; David Lewis Epileptic Colony, Manchester, Secretary of; Dalrymple House, Rickmansworth, Medical Superintendent of; Mrs. S. H. Duranty, Reigate; Dundee Royal Infirmary, Treasurer of; Dr. James Dunlop, Glasgow; Dr. R. Donaldson, Reading.

E.—Messrs. Evans, Sons, Lescher, and Webb, Lond.; Dr. C. R. Elgood, Windsor.

F.—Mr. H. McG. Forbes, Cumineston; Messrs. J. S. Fry and Sons, Bristol.

G.—Dr. E. H. Greves, Bournemouth; General Life Assurance Co., Lond., Secretary of; Grove House, Church Stretton, Medical Superintendent of; Messrs. Gordon and Gotch, Lond.; Messrs. Gilyard Bros., Bradford; Dr. F. J. Geoghegan, Holyhead; G. H. V.

H.—Mr. R. W. Hewson, Stafford; Hommel's Hæmatogen, Lond.; Dr. W. M. Harman, Winchester; Mr. P. D. Hunter, Arlesey; Messrs. C. J. Hewlett and Son, Lond.

I.—Mr. S. T. Irwin, Belfast.

K.—King Edward VII. Hospital, Windsor, Secretary of.

L.—Mr. T. S. Logan, Stone; London Association of Nurses, Secretary of; Colonel C. B. Lawson, R.A.M.C., Rouen; Leeds Public Dispensary, Secretary of; Mr. James Lucas, Midhurst; Mrs. Luce, Chorley Wood; Mr. F. J. Lynch, Armagh; Locum, Lye; Mr. J. Little, Melbourne; London Press Exchange.

M.—Mr. J. P. Lockhart Mummery, Lond.; Mendip Hills, Sanatorium, Wells, Secretary of; Messrs. Mather and Crowther, Lond.; Lieutenant-Colonel H. D. Masani, Caterham; Manchester Corporation, Clerk to; M. P.; Macclesfield General Infirmary, Secretary of.

N.—Newport Borough Asylum, Caerleon, Clerk to the; National Provident Institution, Lond., Secretary of.

P.—Mr. Jas. Payne, Northampton; Mr. P. Pratt, Tunbridge Wells; Dr. A. A. Parson, Lond.; Portsmouth Guardians, Clerk to the; P. L. G.; Dr. H. R. Phillips, Lond.

R.—Royal Albert Edward Infirmary, Wigan, Secretary of; Reuter's Telegram Co., Lond.; Messrs. Rutley, Son, and Vine, Lond.

S.—Dr. G. Stanger, Nevers; Messrs. W. H. Smith and Son, Lond.; Swiss Bank, Lond., Manager of; Mr. E. M. Shepherd, Barrow-in-Furness; Captain D. S. Sutherland, R.A.M.C., Bury St. Edmunds; Major H. S. Lefroy Stein, Monkstown.

T.—Messrs. Chas. Tuckey and Co., Lond.; Dr. F. W. Tunnicliffe, Lond.; Throat Hospital, Lond., Secretary of; Mr. B. H. Howard Tripp, Fawley.

U.—Messrs. Urry, Woods, and Pethick, Ventnor.

V.—Messrs. Van Alexander and Co., Lond.; Messrs. Van Houten, Lond.

W.—Dr. A. J. Whiting, Lond.; W. G. G.; Mr. F. Wilson, Lond.; Messrs. J. Wright and Sons, Bristol; Messrs. Whiffen and Sons, Lond.; Messrs. White, Druce, and Brown, Lond.; Lieutenant J. H. Wilkinson, R.A.M.C., Cirencester; W. C. H.

EVERY FRIDAY.

THE LANCET.

PRICE SIXPENCE.

SUBSCRIPTION, POST FREE.

FOR THE UNITED KINGDOM,		TO THE COLONIES and ABROAD.	
One Year	£1 1 0	One Year	£1 5 0
Six Months	0 12 6	Six Months	0 14 0
Three Months	0 6 6	Three Months	0 7 0

Subscriptions (which may commence at any time) are payable in advance.

ADVERTISING.

Books and Publications ... ... / Official and General Announcements / Trade and Miscellaneous Advertisements and Situations Vacant ...	Five Lines and under £0 4 0 / Every additional Line 0 0 6

Situations wanted: First 30 words, 2s. 6d.; per additional 8 words, 6d.
Quarter Page, £1 10s. Half a Page, £2 15s. An Entire Page, £5 5s.
Special terms for Position Pages.

Answers are now received at this Office, by special arrangement, to advertisements appearing in THE LANCET.

The Manager cannot hold himself responsible for the return of testimonials, &c., sent to the Office in reply to advertisements; copies only should be forwarded.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Cheques and Post Office Orders (crossed "London County & Westminster Bank, Covent Garden Branch") should be made payable to the Manager Mr. CHARLES GOOD, THE LANCET Office, 423, Strand, London, to whom all letters relating to advertisements or subscriptions should be addressed.

THE LANCET can be obtained at all Messrs. W. H. Smith and Son's and other Railway Bookstalls throughout the United Kingdom. Advertisements are also received by them and all other Advertising Agents.

Agents for the Advertisement Department in France—SOCIÉTÉ EUROPÉENE DE PUBLICITÉ, 10, Rue de la Victoire, Paris.